Rock Products

THE INDUSTRY'S RECOGNIZED AUTHORITY

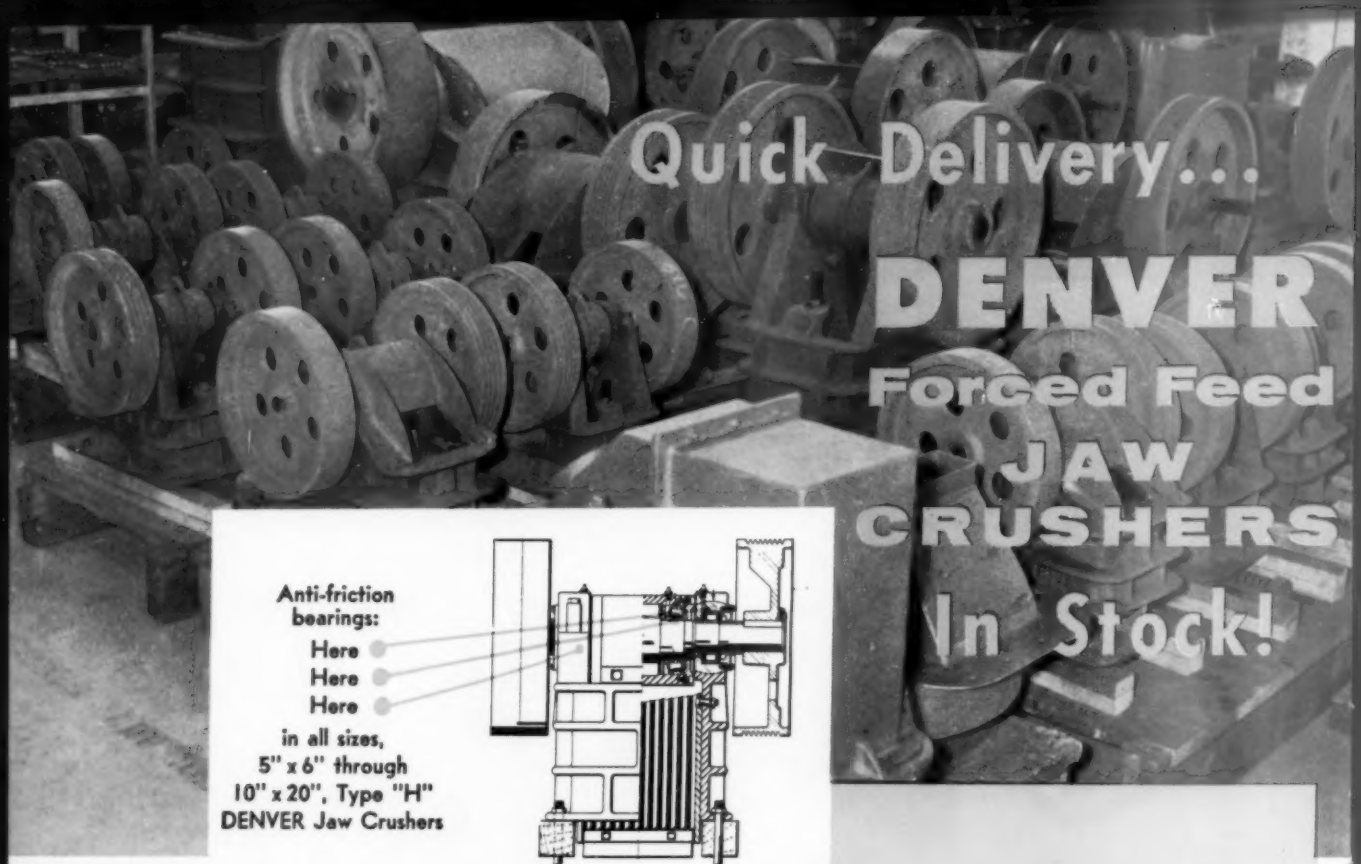
APRIL 1958

Rewards of land rehabilitation

see page 62

Flintkote builds new plant in fight for gypsum market

see page 66



Anti-friction bearings:
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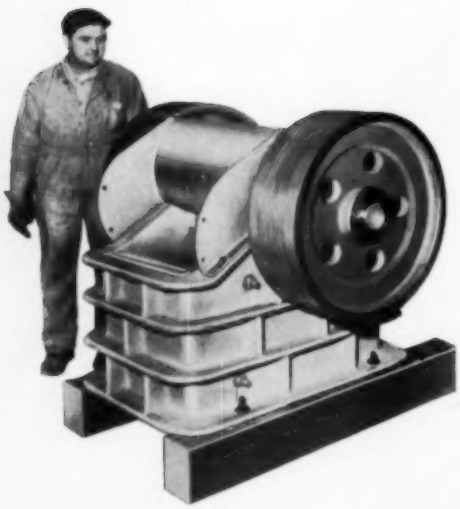
in all sizes, 5" x 6" through 10" x 20", Type "H" DENVER Jaw Crushers



Shipment from stock in sizes 5"x 6", 8"x 10", 10"x 16" and 10"x 20". Other sizes to 36" x 48" are available.

Dealer Inquiries Invited

To provide the quickest possible delivery, DENVER Equipment Company maintains a complete stock of all sizes from 5"x 6" to 10"x 20" DENVER Forced Feed Jaw Crushers in Colorado Springs, Colo. Also, dealer stocks in many parts of the country.

A telephone call brings action to solve your size reduction problem. Recommendations, specifications, prices on request.

Now—Roller Bearings Throughout... for Long Life, Low Maintenance Cost

- Anti-friction roller bearings in side frame and bumper. Crusher runs smoother, bearings last longer, maintenance costs reduced.
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- Jaw plates reversible for long service, low maintenance costs.
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B.F.Goodrich

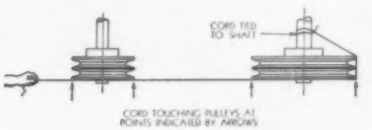
V belt briefs

TIPS ON THE CARE, MAINTENANCE AND SELECTION OF V BELTS FOR INDUSTRY

For longer belt life— keep sheaves aligned

Sheave misalignment is caused by shafts which aren't parallel or by bent shafts or wobbly sheaves. If shafts are not parallel, belts on one side are drawn tighter and pull more than their share of the load. As a result, these belts wear out faster, causing the entire set to be replaced before it has given maximum service. If misalignment is in the sheave only, the belt will enter and leave the grooves at an angle, causing excessive sheave wear.

How to align sheaves: First make sure that shafts are parallel. Measure distance between shafts, both at outside of sheave and at inside. Parallel shafts will be the same distance apart at both points.

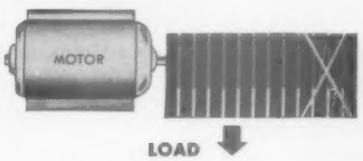


Next, tie a string to drive shaft (as shown in picture). If the sheaves are properly lined up, the string will touch them at the points indicated by arrow. By rotating each sheave through one-half revolution, you can also determine whether sheave is wobbly or drive shaft bent. If either of these conditions exists, the inner rim of the sheave will pull away from the string when the sheave is rotated.

A switch to high capacity belts can save you money

Most V belt drives are operated with belts made for standard horsepower ratings. But the use of belts with higher ratings (about 40% higher than standard) is growing. In most cases, fewer belts are needed when the higher rated belts are used, saving space and cost. Where drives have not worked satisfactorily, a switch to B.F.Goodrich high capacity belts often solves the problem.

More and more new equipment comes with the higher rated belts, so be sure to check whether standard or high capacity belts are required when ordering replacements. B.F.Goodrich high capacity belts are also oil resisting and static conducting.



Nine high capacity belts can do the work of 13.

What caused this V belt failure?

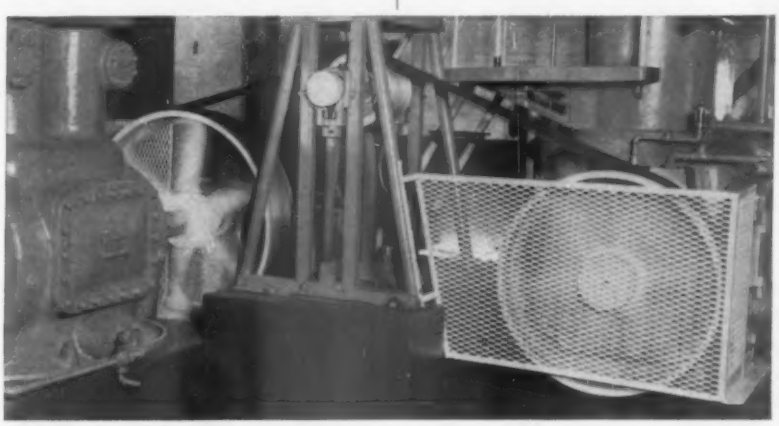
Appearance: Cover fabric ruptured.

Cause: Belt pried over sheaves, or foreign object fell into grooves.

Prevention: Move motor toward driven sheave when replacing belts. Protect belt with cover.

Grommet belts more flexible, absorb shock, last longer

The Grommet V belt made by B.F.Goodrich is more flexible because it has its load-carrying cords concentrated in twin grommets. They are completely surrounded by tough, resilient cord-free rubber and bend easily, giving more uniform grip. There are no plies of fabric to stiffen belt and decrease ability to absorb shock. There is no splice, no stiff built-up section where cords overlap. This stronger, more resilient construction gives the B.F.Goodrich Grommet belt 20% to 50% longer life. Yet it costs no more than ordinary belts.



BELTS WERE WHIPPED TO DEATH—*The pulsating load of this compressor was whipping belts to pieces in no time. Many belts were tried; most lasted only three or four months, had to be taken up every day, none had ever lasted a year. Then B.F.Goodrich Grommet V belts were tried. That was 18 months ago. There's no sign of wear yet, and no takeup since the first day—not one moment of attention or service.*

Ask a factory-trained specialist

For help in selecting V belts for any kind of service, call the man who is a specialist in V belts—your B.F.Goodrich distributor. He can help you cut costs by getting longer life from your V belt drives. *B.F.Goodrich Industrial Products Company, Dept. M-312, Akron 18, Ohio.*

B.F.Goodrich V belts

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APRIL 1958

FEATURES

The rewards of land rehabilitation ● *Hubert C. Persons* 62

American Aggregates Corp. tells how they were able to reap multiple benefits in good will from their rehabilitation program

Flintkote fights for piece of gypsum market ● *Elwood Meschter* 66

Flintkote builds new plant featuring automatic control of kettles, elaborate dust collection system, speed control of board machine

The philosophy of George Pettinos ● *Joseph N. Bell* 72

A few weeks ago Mr. Pettinos died, but his ideas and personal outlook are still valuable to the industrial sand field

Squeezing oil from shale ● *Walter B. Lenhart* 76

Union Oil Company's demonstration plant in Colorado has shown that oil can be taken from the Colorado shales commercially

National Sand and Gravel Association convention 82

Members gather in Chicago to discuss problems ranging from zoning, public relations, severance taxes to rail rates, insurance, safety

New dust control idea 101

A barbed electrode has licked the old problem of dust accumulation on energizing wires and thus gives a greater degree of efficiency

National Crushed Stone Association convention 105

Industry-wide problems come into the foreground of discussion at the Association's recent Chicago convention and exposition

National Agricultural limestone Institute meeting 108

The big item to come out of this convention is the action on the part of the industry to seek better legislation for ag-lime

National Crushed Limestone Institute convention 112

The federal highway program came in for some heavy review at this group's recent meeting in Washington, D.C.

Expanded Clay and Shale Association meeting 115

A group of lightweight aggregate producers got together in Chicago for a discussion of sintering machine efficiency

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Germany—Georg J. Linder, Wittelsbacher, Allee 60, Frankfurt Am. Main.; James K. Binder, American Business Journals, Zaehringerstrasse 28, Berlin-Wilmersdorf.

ROCK PRODUCTS is published monthly by MACLEAN-HUNTER Publishing Corporation, 79 W. Monroe St., Chicago 3, Illinois: P. D. Allen, President; Copyright, 1958, by Maclean-Hunter Publishing Corporation. Entered as second-class matter, Jan. 30, 1936, at the Chicago, Ill., post office under the act of Mar. 3, 1879. Additional entry at Long Prairie, Minn.

SUBSCRIPTION INFORMATION
Subscription Price: United States and Possessions, Canada one year, $3.00; two years, $4.00; three years, $5.00. U.S. single copies, fifty cents. Pan American, one year, $8.00; two years, $14.00; three years, $20.00. All other foreign one year, $12.00; two years, $22.00; three years, $30.00. One dollar for single copies. Canadian subscriptions and remittance may be sent in Canadian funds to ROCK PRODUCTS P.O. Box 100, Terminal "A," Toronto, Canada.

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the big, new money saver is tandem hauling

two big payloads one power plant, one driver

New Tandems Save $100,000

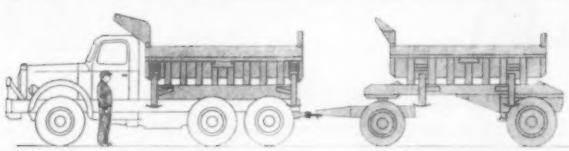
SEVERAL LEADING cement plant and crushed stone quarries have changed over to EASTON tandem hauling because they get *"two big payloads for the price of one."*

A typical report, coming from a quarry where nine EASTON tandems are in use, shows savings up to $100,000 a year. Before the changeover this quarry used single EASTON semi-trailer units hauling stone from shovel to crusher. In 1955 the quarry purchased an experimental EASTON tandem unit. In 1956 three more were added. The quarry now has nine EASTON tandems in operation, and a tenth in reserve. Tandems at this quarry combine EASTON semi-trailers with full trailers (EASTON dollies and semi-trailers).

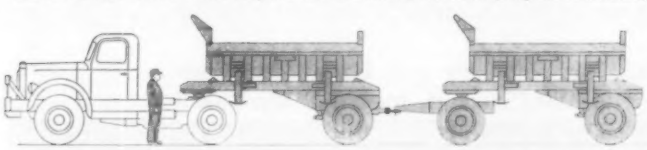
Increased Production

ONE QUARRY superintendent says: "Our drivers now haul double payloads on every trip. Delivery to the primary crusher has increased from about 600 to 1000 tons an hour. Maintenance on these rugged EASTON tandems is limited to routine lubrication and tire changes, and their safety record is excellent."

TWO TYPICAL EASTON TANDEM RIGS



Above: Truck with back mounted body in combination with a full trailer (dolly and semi-trailer)



Above: Tractor semi-trailer in combination with a full trailer (dolly and semi-trailer)

EASTON TANDEMS may be purchased as complete new equipment, or converted by rigging an extra semi-trailer to single EASTON truck body or semi-trailer units now in service. Capacities range from 28 to 72 tons, or larger. For complete information write, wire or telephone (EASTON 3-4221).

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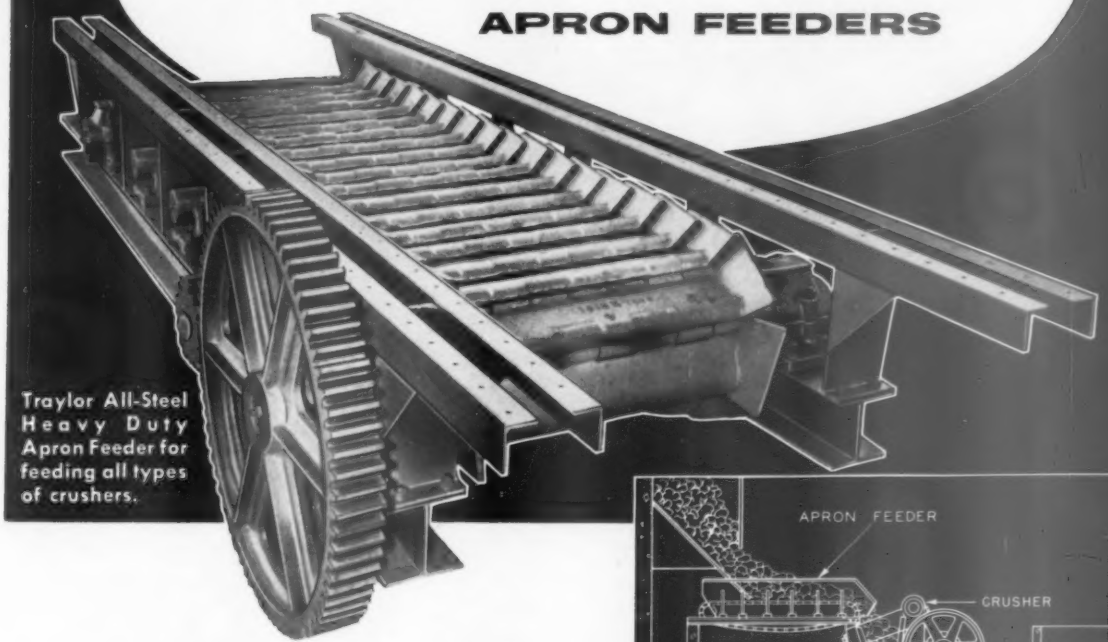
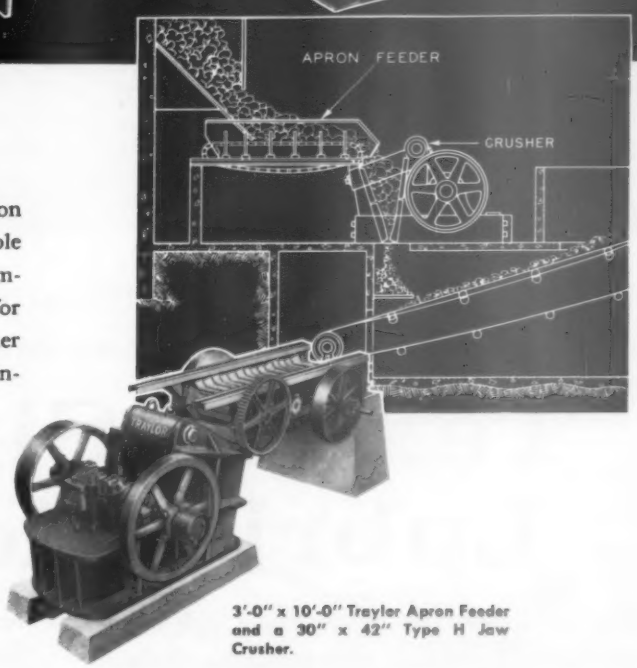


Traylor All-Steel Heavy Duty Apron Feeder for feeding all types of crushers.



Traylor All-Steel Heavy Duty Apron Feeder is designed in heaviest possible proportions to resist shock from the impact of large lumps of material. Use for volume feeding direct to a primary crusher or from under large bins to a belt conveyor with practically no impact or damage to the belt. This feeder operates in a horizontal or inclined position. Write for bulletin No. 2114.

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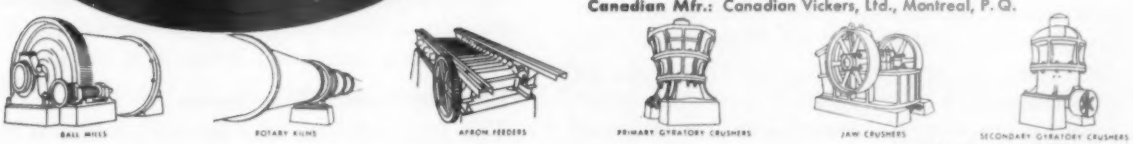

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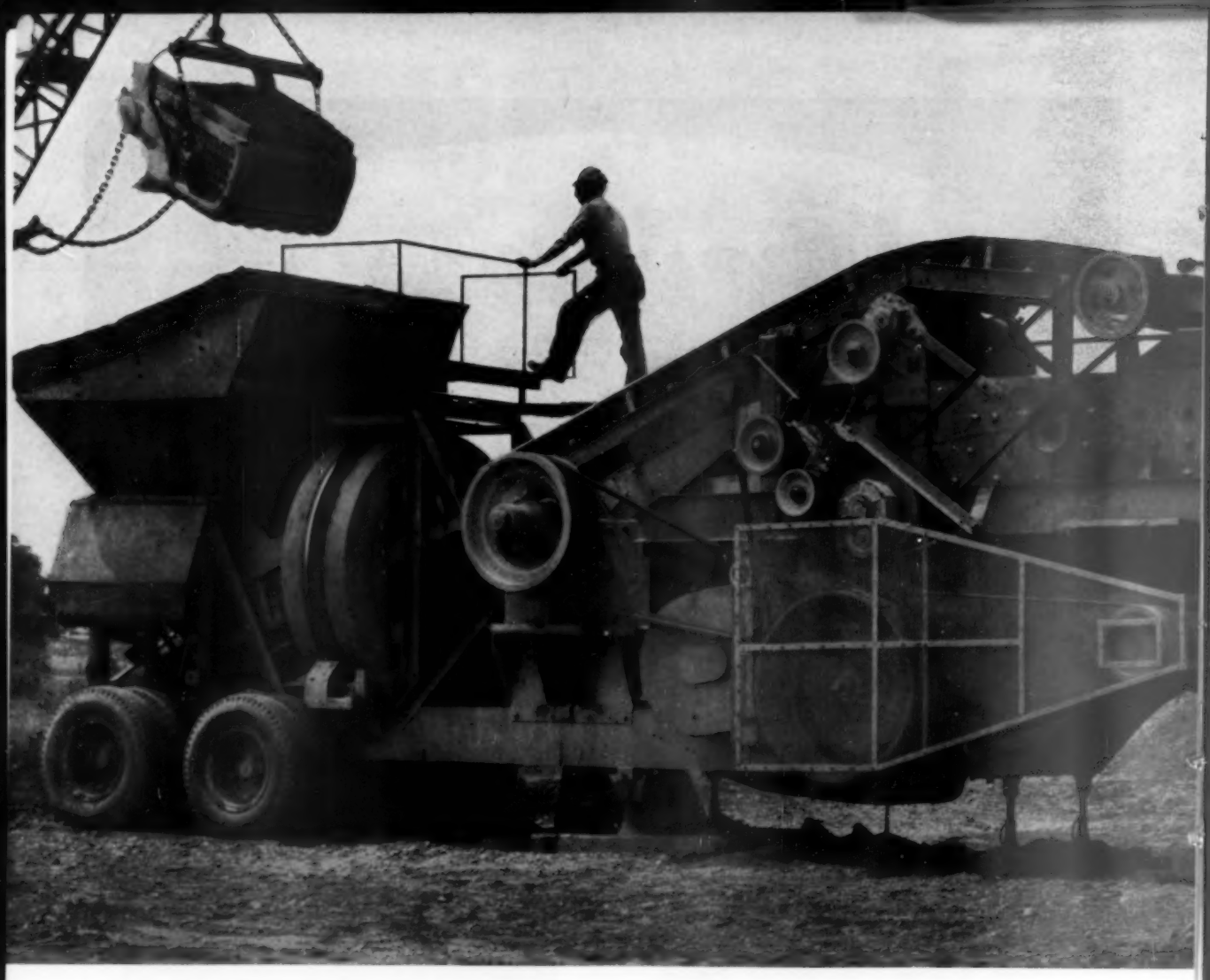

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Plan can reduce lubricant inventory and improve lubrication. It can mean more productive manhours, less repair costs, less time lost

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How the Texaco Plan works

The Texaco Simplified Lubrication Plan is based

Photo courtesy Iowa Mfg. Co.

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Get the full details

Your local Texaco lubrication representative can give you complete information on the *Simplified Lubrication Plan*. Just call the nearest of the more than 2,000 Texaco Distributing Plants in the 48 States, or write:

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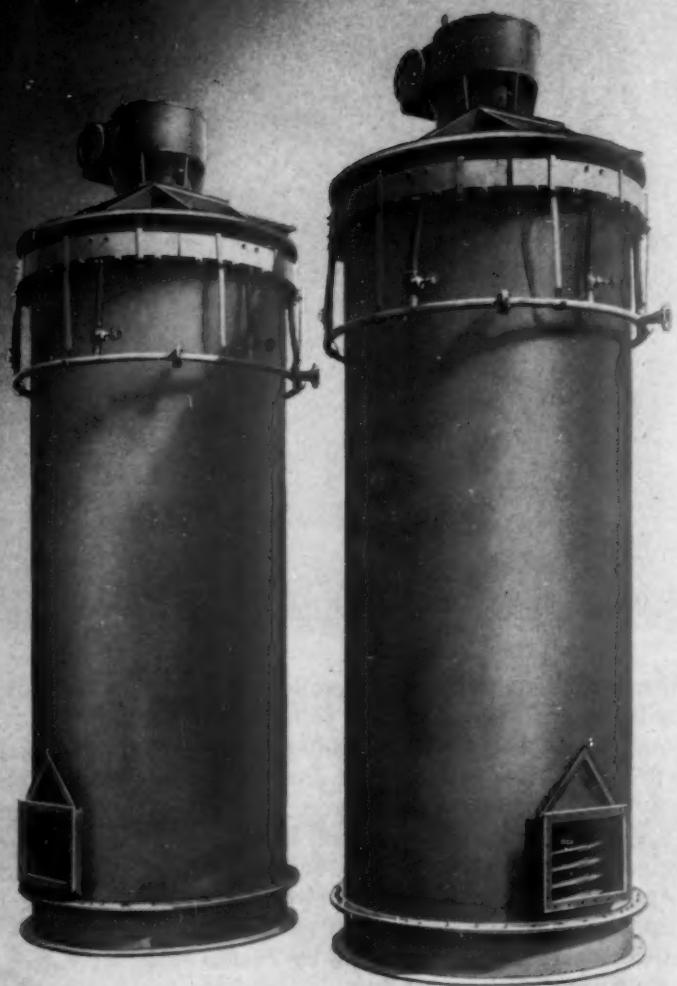
The Smidth Cooler may also be used with many other similar dry pulverized materials.

Illustrated here are two 6' 6" dia. x 17' 7" high Smidth Coolers ready for shipment.



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What's Happening

IN OTHER FIELDS OF INTEREST TO THE ROCK PRODUCTS INDUSTRY

April, 1958

A world record for tunneling in hard rock has been claimed by Swedish miners working on the Stornorrfors underground hydro station. They removed 38,100 cu. ft. of rock per day per heading, averaging over four headings totaling 2½ miles in length. During top production periods, daily removals exceeded 40,000 cu. ft. Rock moving innovations employed to achieve this volume included a special frame mounting 13 chainfeeds and drills across the width of a heading.

Use of glass for concrete reinforcement has been reported in a Russian periodical. From test data obtained in investigations carried out by the Kiev Polytechnic Structural Laboratory, use of 20 micron diam. strands are advised if no protective coating is applied. When coated with synthetic resins, strands show no deterioration after 6, 12 and 30 months. Bond stress varied from 430 to 1,100 psi., and coated strands showed a better bond.

A way to haul liquid fuel over rough terrain has been developed by Goodyear Tire and Rubber Co. and Four Wheel Drive Auto Co. for the Army's Transportation Research and Engineering Command. Five-ft. diam. rubber tires, each holding 5,000 gal., can be filled with fuel and towed behind a carrier. As demonstrated recently, a chain of 10 bags formed a 50,000-gal. container.

Pioneering work in microbial research has begun at four Bureau of Mines laboratories to determine usefulness of microbes in recovering copper, nickel, cobalt and other metals from low-grade ores, for producing synthetic liquid fuels from oil shale, and for studying the structure of coal. Tests conducted at the Bureau's Eastern Experiment Station in College Park, Md. have shown that bacteria action, oxidizing sulfur to acid, results in recovery of many times more metal from low-grade ores.

New construction put in place in January was valued at $3.3 billion, a record for the month. Seasonally adjusted, the annual rate of outlays in January was $48.5 billion, up $1.2 billion from the record actual outlay of $47.3 billion in 1957. These figures were furnished by the Commerce and Labor Departments. In another announcement, the Department of Labor reported the pace of private home building in January, with 64,200 starts, to be figured at an annual rate of 1,030,000. Administration economists predicted starts totaling 1,100,000 for 1958.

A report from Britain concerns development of woven asbestos material for mining and industrial purposes. It is said to be applicable to conditions where temperatures of up to 300 deg. C. are encountered. Developed by scientists at the Department of Scientific and Industrial Research, the material has been field tested, showing resistance to sliding with a coefficient of friction of .38 to .4.

A project to develop and exploit a process for recovery of high grade alumina from low grade coal ores and coal mine clay wastes is being undertaken by North American Coal Corp. and Strategic Materials Corp. They have formed the Strategic North American Corp. which anticipates construction of a commercial-scale plant near North American Powhatan coal mines in southeastern Ohio. Pilot plant and research work will be carried out at the Niagara Falls, N.Y., laboratories of Strategic Materials.

Aluminum producers are cooperating in several exciting applications for the material, one of the latest reported being an experimental aluminum bridge to be constructed of rolled sheets. Designed by Fairchild Engine and Aviation Corp., Hagerstown, Md., the bridge will consist of three beams—three long triangles of ⅛-in. rolled aluminum sheets, stiffened by aluminum extrusions riveted to the sides of the sheets. The triangles will be connected edge to edge at the top to form a top surface and by an aluminum plate across their points at the bottom. A concrete deck and wearing surface will be placed atop the beams. The 75-ft. span bridge will be erected this year near Bethlehem, Pa.

Bulldozer blades of aluminum are showing up in another experimental use for the metal. Ford Motor Co. has designed two prototype blades, each 128 in. wide, that can be fitted directly to Army tanks in the 40 to 45-ton class. Arc of the concave blade has a 36-in. radius. Blades are fabricated of 1-in. aluminum plate, welded to 1 in. thick aluminum plate mold board cross bulkheaded with ¾-in. welded aluminum plate. At the bottom of the blade is bolted a 6-in. blade of plow steel to resist abrasion. Ordnance tests of the blades will be made at Aberdeen testing grounds and field tests will be made at Fort Knox.

Farmers near cement plants benefit from lime blown in, affirms a study reported in **New Jersey Agriculture.** Authors Fred B. Clucas and J. C. F. Tedrow decided to determine the extent of the area which received "free limestone" after examination of soil samples in southern Warren County, N. J., showed that they possessed pH values considerably higher than would be expected under normal conditions. Seventy-nine samples were taken at random from wooded areas within five to 10 miles of the cement plants. These soils, normally having a pH of 4.5, were found to have a pH value as high as 8.1. Of the total number of samples tested, 67 had a pH of 6.0 or above. Concentration, of course, was greatest in areas nearest the plants, but in some instances there was a small measurable effect as far as 10 miles away.

An ill wind blew some good for tractor operators in Niagara Falls, N.Y. Exposed to the wind and weather, they were falling prey to winter ailments, and a group of executives from various industries got together to see what could be done to keep illness down. Result: an enclosure of plate glass, plastic and fabric, designed by an auto trim shop specializing in installation of tops on convertibles. It is welded to the frame and is entered through a door. Visibility is provided by the 32 x 36-in. windshield and plastic windows.

Gasoline briquettes are a "solid fuel" developed by Soviet scientists. Emulsifying and solidifying gasoline results in the briquettes which are said to solve problems of storage and evaporation.

The editors

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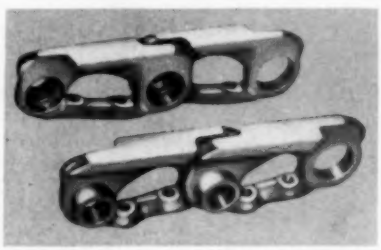
PRETESTING STEEL IS ONE WAY MATCHLESS QUALITY IS ASSURED IN GENUINE CATERPILLAR PARTS

Careful selection of material gives greater strength to new D8 strutless track links

Quality doesn't just happen. The world-famous quality that is the hallmark of Caterpillar earthmoving equipment is a direct result of never-ending research, the finest possible materials, and persistent attention to every manufacturing detail. This is true of Caterpillar machines. And it is true of Caterpillar parts.

The new, strutless link for Cat D8 Diesel Tractors is an example of this emphasis on quality. Each link is able to bear the entire weight of the tractor, over and over again, in the roughest of terrains and climates. This is how Caterpillar makes sure these links meet this challenge:

All steel used for links is given an extensive series of tests *before* manufacture. In the Caterpillar Metallurgical Laboratory it is first analyzed for chemical composition by a spectrograph—slight variances in chemical make-up can result in big differences in the finished product. Then the steel is tested for hardenability; in other words, the degree to which it will respond to heat treating. Resistance to impact loads is measured to insure the track link will give maximum performance under all conditions. Steel that cannot be made into Caterpillar quality links is rejected.



New, strutless link for Caterpillar D8 Diesel Tractors.

The new D8 link is forged—the best way to make a link. Forgings are more dense. They have "inner flow lines"—the equivalent of grain in wood—following the contour of the part, providing greater strength at critical locations as well as resistance to breakage.

"Dubbed-off" link ends eliminate damage to rollers and mating links. Strategic designing of steel into the bushing boss and arch improves fatigue strength. Links are *double* heat treated, furnace heated for a tough core, and "Hi-Electro" hardened for a deep, superhard rail surface.

Features like these mean one thing. A Caterpillar part is your best buy. Your Caterpillar Dealer has full information on the new D8 strutless links and the other quality Cat parts. See him today.

Caterpillar Tractor Co., Peoria, Illinois, U. S. A.

SERVICE TIP

For maximum life, tracks should have 1½" to 2" of slack. Your Operation and Maintenance Instructions have complete adjustment details.

CATERPILLAR

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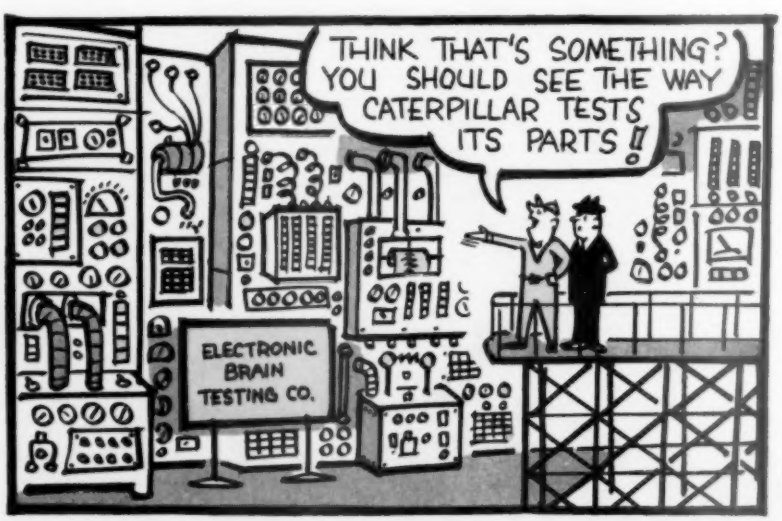
LINK STRENGTH is measured on this hydraulic press. The design of Caterpillar track parts is under constant examination by the most extensive research facilities in the industry.



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EDITOR'S PAGE

This change in policy is paying dividends

MODERN OPERATORS have cast aside the old policy of keeping a blanket of secrecy over their individual operations. They've found out that, by removing that blanket, they take in much more usable information than they give out. The result is: (1) more progressive and efficient operations, and (2) a more progressive and informed industry.

We subscribe fully to the method as it applies to the rock products industries; not only because it's our business to inform, but mainly because we believe in the principle itself. And we hope you'll join the growing group of operators that are using the method.

We're delighted to report that certain producers in the crushed stone industry have bonded together through the National Crushed Stone Association to improve their collective knowledge on production efficiency. They realize, as most of you must, that productivity rates are now more important in industry economy than at any previous time. They want to compare, so they can improve. And they're eager to have other producers join them in the project.

This work in the crushed stone industry was pioneered—and is being promoted—by T. C. Cooke, a Massachusetts producer. Mr. Cooke has emphasized the importance he places on trading productivity information. His experience to date prompted him to say: "Operators will profit by exchanging ideas. I hope a great deal of this will be done in the future."

We know that other rock products producers and national associations have similar activities underway, and we know they've taken an important step toward greater industry progress. But some producers still hesitate to climb on the band wagon.

Of course, there'll be some problems to work out, such as setting up methods of reporting experience that can be compared, since every operation differs. But these are minor difficulties when you compare the beneficial results that can be obtained from a full program of information exchange. So, don't let them hinder your decision to join the collective effort.

We urge—with all the emphasis possible—that you get together with as many fellow producers as possible in information-exchange programs. You may be astounded to learn that the benefits you'll get will far outweight the contributions you make.

George C. Lindsay

BOUGHT 30 MORE

Since they switched to "Jimmy" Diesels

Pennsylvania quarry operators, D. M. Stoltzfus and Son, Inc., bought their first General Motors Diesel in a Koehring Dumptor back in 1945. Now they have more than 30 "Jimmys" operating in four plants, producing over 5,000 tons of crushed stone per day.

Job Superintendent Warren Benner says: "Interchangeability of parts is a decided advantage with GM Diesel engines. With a small stock of spare parts, we can take care of most service jobs ourselves and get equipment back on the job with minimum lost time. GM Diesels start quickly, are easy to operate and give us long periods of trouble-free performance between overhauls. I can't trace one instance where GM Diesels have failed us on the job."

Add the faster work output of these dependable 2-cycle engines to ease of maintenance and lower cost of interchangeable parts, and you have the reasons operators everywhere standardize on GM Diesels. For full facts, call your GM Diesel distributor or write us.

DETROIT DIESEL Engine Division of General Motors, Detroit 28, Michigan

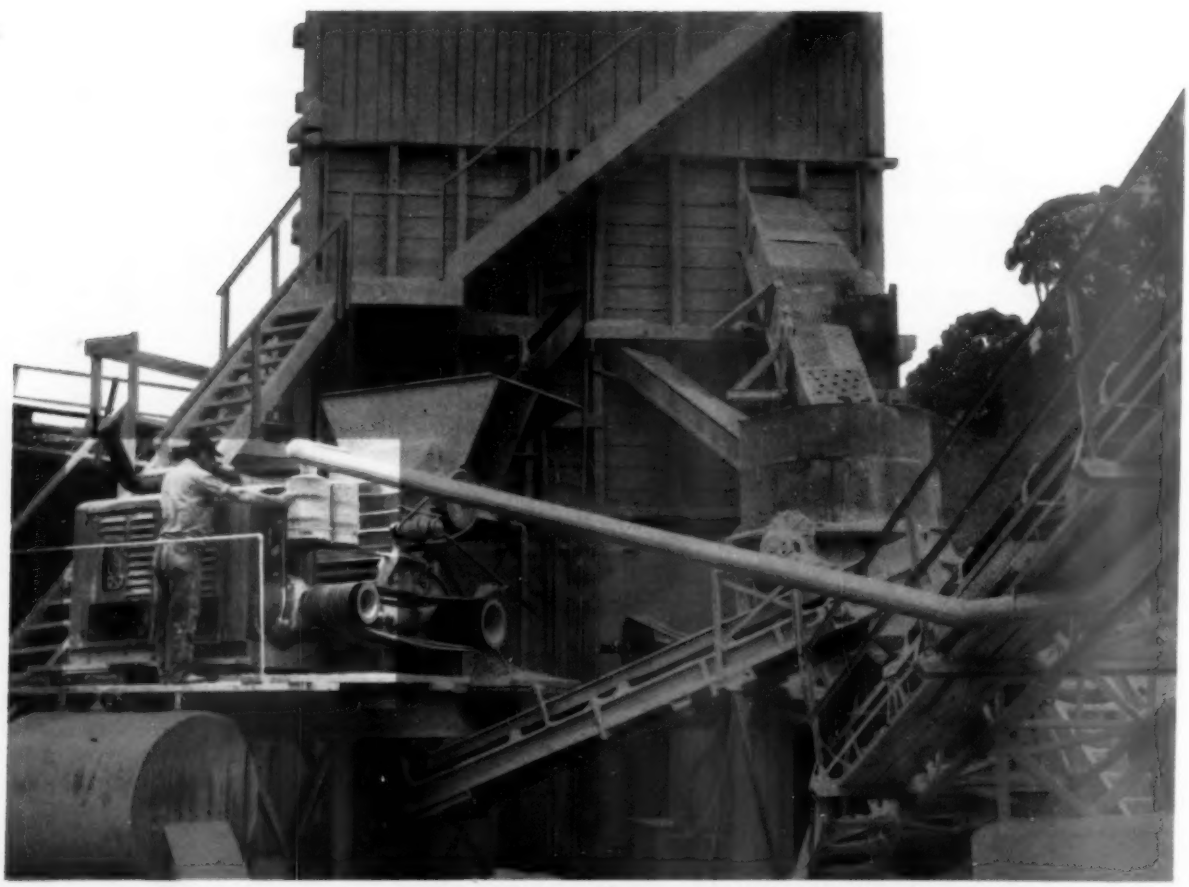
GM GENERAL MOTORS DETROIT DIESEL POWER

Regional Offices: New York, Atlanta, Detroit, Chicago Dallas, San Francisco

In Canada: GENERAL MOTORS DIESEL LIMITED, London, Ontario

Now—more than ever—it pays to standardize on GM Diesel—available in 1485 applications of power equipment built by more than 175 manufacturers

Parts and Service Worldwide



GM "6-110" Diesel drives hammermill at plant in Cedar Hill Quarry of D. M. Stoltzfus & Son, Inc., Talmage, Pa.

Enter 1447 on Reader Card

ROCKY'S NOTES

NATHAN C. ROCKWOOD

A lost opportunity in mortar cements

WE ARE BACK ON a subject that has often attracted us—the possibilities of pozzolanic cements for mortar. We don't necessarily mean portland-pozzolan cements, which are now a reality in some markets. They could well be lime-pozzolan mixtures. In our humble opinion, American lime manufacturers have long missed a good bet in not having developed and marketed a lime-pozzolan mortar cement, the virtues of which are attested by successful use from the dawn of civilization.

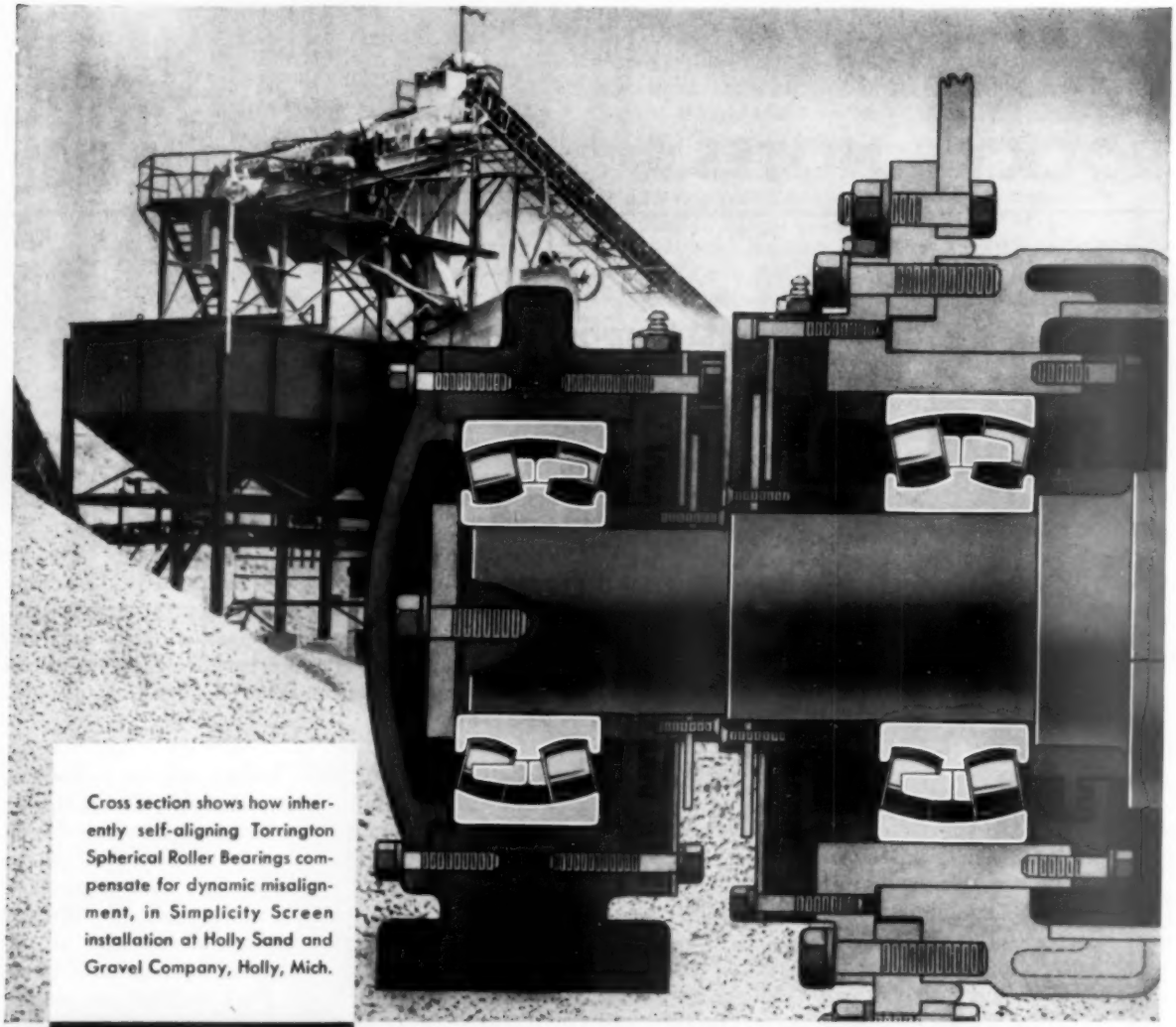
The subject comes to mind again from two sources: (1) The Committee on Lime of the American Society for Testing Materials is in the process of adopting a proposed specification for pozzolans for use with lime; (2) an article on "A New Approach to the Problem of Surki as a Pozzolan," by S. R. Mehra, director, Central Road Research Institute, Delhi, India, published in **Indian Ceramics**, January, 1957. The use of lime-pozzolan mixtures for hydraulic cement in India goes back farther than any written record. It was probably from the Far East that the Greeks and Romans learned how to make and use it. Hence, it is interesting and appropriate that Indian scientists should write about the use of such mixtures.

The ASTM Lime Committee's definition of a pozzolan is "a siliceous or aluminum-siliceous material which in itself possesses little or no cementitious value, but which in finely divided form and in the presence of moisture will chemically react with alkali and alkaline earth hydroxides at ordinary temperatures to form or assist in forming compounds possessing cementitious properties." That is, in our opinion, a much better definition than the one already in the ASTM Book on Standards, for defining pozzolans for use with portland cement. Apparently, the portland cement industry abhors any reference to alkalies in connection with cement components or admixtures, yet, as the Indian research has shown, the addition or presence of an alkali may make the difference between a prospective reactive and a nonreactive pozzolanic material. The Lime Committee's inference that alkalies "assist" in forming cementitious compounds is borne out by every reference we can find to the use of pozzolans before the widespread use of portland cement.

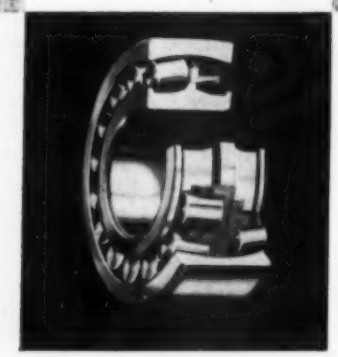
Indian research. Our Indian author starts out with a very familiar introduction: "Research on surki in the past had been on certain conventional lines which have yielded no fruitful results. On the other hand, much confusion has been caused by apparently contradictory results got by different workers on such vital factors as the type of soil most suited for surki making, the degree of burning required, etc." The text farther on states: "The idea has been strong in our minds that surki should be derived from burned bricks. Though burned clay powder is also surki, it is usual to get this product from burned brick. The mechanical analysis curves for a number of soils from which surkis have been prepared are loamy in character, with a large percentage of sand and silt—such soils as are generally suited for brick making. It is significant that almost all such soils failed to yield good surkis."

The author explains why this is so. Brick clays must contain considerable percentages of nonpozzolanic constituents (stable minerals) to prevent excessive shrinkage and cracking. The constituents required for pozzolanic activity are the very finest clay minerals. However, all highly clayey soils do not make active pozzolans. Referring to American research, largely reported in the **Proceedings of the American Society for Testing Materials**, the author states: "The effects of changes in the crystal structure on pozzolanic activity have been indicated though not elaborated." Conse-

Please turn to page 142



Cross section shows how inherently self-aligning Torrington Spherical Roller Bearings compensate for dynamic misalignment, in Simplicity Screen installation at Holly Sand and Gravel Company, Holly, Mich.



TORRINGTON

Spherical Roller Bearings Roll Freely Under Shock and Eccentric Loads

Inherently self-aligning, Torrington Spherical Roller Bearings roll freely at full capacity despite deflection of equipment framing or shafts under load.

This feature contributes to smooth operation and long life in Simplicity Engineering Company Screens. Positive roller guidance by the integral center flange provides constant and uniform roller contact with the race under radial and thrust loads, reducing wear and friction under shock and eccentric loading conditions.

Construction equipment of all types benefits from the advanced design features of Torrington Spherical Roller Bearings. To secure unsurpassed performance with minimum maintenance, specify Torrington. **The Torrington Company, South Bend 21, Ind.—and Torrington, Conn.**

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Washington Letter

Edgar Poe

Wage Demands The AFL-CIO, with headquarters in the nation's capital, has dispatched what it calls "warnings" to its people over the country. It declares that some employers are attempting to capitalize on the recession to deny wage increases.

However, the research department of the powerful labor organization says that more than 4,000,000 workers will receive 1958 wage increases ranging from seven to 13 cents an hour. Most of the 1957 wage increases were 10 cents an hour, with about one-third receiving 13 cents an hour, according to labor organizations.

A labor organization, in order to be effective with its members, needs always to strive for higher and higher wages. Many companies, including those in the rock products field, appear likely to be called upon for wage increases despite the economic drop.

Economic Readjustment Perhaps the foremost economic question this spring is whether an expanded home building program and the big highway construction program can offset the decline in manufacturing production and the sharp employment drop.

The economic shakedown that began last Labor Day was inevitable. Nevertheless, building activity in 1957 was at an all-time high and indications are that this year will be about as good or slightly better. However, the American people are likely to hear a series of paradoxical statements about the economic picture. This is election year, with all 435 House seats and a third of the Senate seats to be filled.

It is going to cost more money to do business this year than last. One important reason is that both state and local governments have raised their taxes. Most of the increased taxes will not come due before the end of the year.

The United States Commissioner of Labor Statistics, Ewan Clague, maintains that builders and buyers can support a big home-building program of from 1,200,000 to 1,400,000 construction starts this year. Such a building program would have a marked uplifting benefit on the economy.

Gloomy predictions, many of them emanating from Capitol Hill and mostly tainted with partisan politics, have not helped the readjustment period. In a few states the gasoline tax has been declining slightly for several months. The trend for years has been a small monthly increase in gasoline tax collections. Therefore, the decline should be a warning not only to the states, but to Congress, that the present taxes on motor vehicles and petroleum products in this country are as stiff as can be assessed.

Pensions For the Self-employed Owners and operators of small businesses in the rock products field, and self-employed people generally, feel that the federal government really discriminates against them relative to financing retirement plans. The owner of a small business can establish a pension plan for his employes out of earnings before taxes. On the other hand, if he makes any provision for himself, he must pay for it out of taxed dollars.

Because of the asserted discrimination, Congress has received appeals from many people in all sections of the country. A number of persons have appeared before the House Ways and Means Committee proposing that Congress liberalize its retirement tax structure in order to encourage individuals to set up pension plans for themselves.

Under terms of the Jenkins-Keough bill, Congress would allow an annual deduction by self-employed persons, for federal income tax purposes, of 10 percent of their self-employment up to $5,000. Amounts deducted would be paid into restricted retirement funds or as premiums on a retirement policy.

The American Thrift Assembly has presented Congress with a clear-cut picture of the inequities it insists now exist. For instance, Smith owns a

little sand and gravel business. Jones is an employed manager of a cross-town sand and gravel business. Each earns $6,000 a year. Both would have $5,400 of spendable earnings after taxes. However, Jones has $1,146 additional compensation in the form of an employer-paid contribution to a pension plan that provides $150 a month at the age of 65.

If Smith, owner of the sand and gravel business, put up $1,146 for a pension plan for himself, it would reduce his spendable income to $4,254. To come out even with employe Jones at the $5,400 figure after taxes, Smith's sand and gravel operations would have to net $7,404 against Jones' $6,000, and have a taxable income of $4,264 after exemptions and deductions against Jones' $3,000. He would pay income tax of $808, and Jones, $600.

Modernizing Post offices

President Eisenhower's $2-billion program to modernize the physical plants of the post offices over the country during the next five years has been received favorably on Capitol Hill. It would affect every section of the country.

The White House plan would include rehabilitation, enlargement and replacement of some 2,500 government-owned post office buildings and modernization of 12,000 leased buildings. The program calls for modern mail handling facilities for all post offices. By terms of the program, proposed funds from private investors for building new post office and federal buildings under the lease-purchase program would amount to $1.5 billion.

Like the highway construction program, the post office building program would be a marked stimulant for the construction and rock products industries in this country.

Democrats Hopeful

In the face of any denials to the contrary, the great bulk of the members of labor organizations in this country usually vote the Democratic ticket. For this reason, among others, the Democratic leadership is expecting the 1958 congressional races to increase the Democratic majority of the House and Senate. It will be no surprise if the Democrats roll up a thumping majority of some 50 Democratic members. The Senate majority probably will be increased by a half dozen members.

The lineup presently stands at 49 Democrats and 47 Republicans. There are several reasons why the Democrats are favored. In the Senate, for instance, practically all the Democrats up for reelection this year hail from the South.

Proposed Highway Legislation

Several bills are pending before both the House and Senate Public Works Committees proposing amendments to the 1956 Highway Act. Most of the proposals, however, are likely to wither on the legislative vine without becoming law. On the other hand, two or three of the proposals are likely to get serious consideration.

Senator Dennis Chavez of New Mexico, chairman of the Senate Public Works Committee, and Representative George H. Fallon of Maryland, vice chairman of the House Public Works Committee, are sponsoring bills that would increase federal-aid authorizations for the 1960 and 1961 fiscal years for the federal-aid primary and secondary roads.

The proposed authorizations of $900 million for fiscal 1960 and $925 million for 1961 would amount to increases of $25 million and $50 million over the $875 million authorized for these systems for 1959.

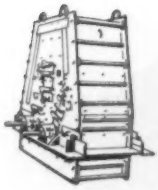
The authorized 41,000-mile Interstate System would be increased under terms of several bills, including one by Chairman Charles A. Buckley of the House Public Works Committee. The mileage would be raised by the miles of toll roads, bridges and tunnels that are to be incorporated into the system. The proposals would direct Secretary of Commerce Sinclair Weeks, upon application by the state, to designate other interstate routes within the state that are equal in mileage to the toll roads incorporated into the system.

Bypassed cities of 50,000 or more population not directly connected with the Interstate System would become eligible for connection under measures by Representative Winfield K. Denton of Indiana, and Representative William L. Springer of Illinois. The midwesterners would increase the mileage of the Interstate System to connect the 50,000-plus cities. House Public Works members doubt that the proposals, at least in their present form, would reach the floor of the House.

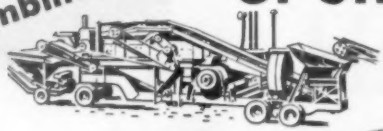
AASHO Opposes Stretch-out

The American Association of State Highway Officials has expressed to Congress its all-out opposition to any so-called stretch-out of the 13-year Interstate System construction program. C. R. McMillan, president of AASHO and South Carolina's chief highway commissioner, declared that the national organization he represents does not want a cutback or stretch-out. He declared in testimony before the Senate Public Works Committee that the state highway departments across the nation are geared up to the original construction schedule.

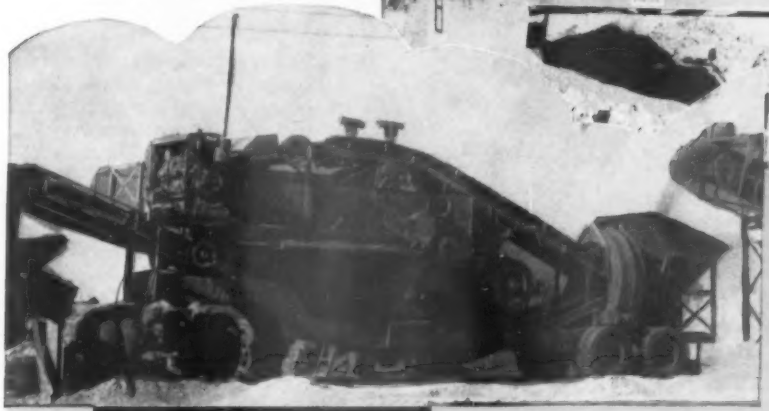
END



Cedarapids Skid-Mounted Primary Portable Secondary Combination . . . PRODUCES BIG VOLUMES OF STRICT-SPECIFICATION AGGREGATE



Cedarapids "Packaged" skid-mounted stationary 3645 Double Impeller Impact Breaker produces a high percent of required smaller sizes in the primary reduction operation. Cedarapids 36" x 14' Feeder feeds quarry rock onto a single deck 40" x 6' Vibrating Grizzly to by-pass fines around the Impact Breaker.



Material from the Double Impeller is conveyed to a surge pile and is then fed into this Cedarapids Portable 4033 Hammermill Secondary Plant. Oversize from the top screen deck goes through the hammermill for secondary reduction, while material passing the ¾" bottom screen deck is delivered directly to the Cedarapids screen-bin unit.

MAXIMUM PRODUCTION OF SPECIFIED SIZES

¾" to ⅜" MATERIAL		
Size	Minimum	Maximum
1"	100	
¾"	95	100
½"	50	90
⅜"	10	40
No. 4	1	10
No. 8	1	6
No. 30	1	6
No. 50	1	6
No. 100	1	5
No. 200	1	4

LIMITS—⅜" Chip Material		
Size	Minimum	Maximum
⅜"	100	
No. 4	60	80
No. 8	40	55
No. 30	17	28
No. 50	17	25
No. 100	15	22
No. 200	11	17

The combination of a Cedarapids 3645 Double Impeller Impact Breaker and a Cedarapids Portable Hammermill Secondary used by Beu & Sons Co. of LaPorte City, Iowa, is producing 70% of ⅜" minus and 30% of ¾" material at an average 220 ton per hour production rate . . . and as high as 5800 tons of 1¼" in 18 hours . . . with a high crushing percentage. Look at the screen-analysis table on this plant's production. This type of operation proves the versatility and productivity of Cedarapids equipment for turning out strict-specification aggregate in the tonnages demanded.

IOWA MANUFACTURING COMPANY
Cedar Rapids, Iowa, U. S. A.

Enter 1463 on Reader Card

How would you decide?

A roundup of actual day-to-day in-plant problems and how they were handled by management men

Can you demote an employe for violating a company rule?

What Happened:

CARL DRIVER, an employe with many years of service, had come up from the labor pool to be shovel-operator and crew leader. Driver and his foreman engaged in verbal tiffs from time to time because Driver was not in the habit of taking orders graciously or easily. After a particularly bitter exchange, the foreman went to the plant manager and said that he couldn't work with Driver any longer. He explained that Driver had given him "a hard time" during the past several years, and his patience was exhausted. The foreman put it on a "him or me" basis. Driver was called to the super's office and told he was being demoted back to the labor pool because of his lack of cooperation. He could accept this assignment or quit. Driver said that the new assignment to the labor pool wasn't satisfactory, and he wouldn't quit. He claimed:

1. The company had a right to suspend or discharge employes for disciplinary reasons, but the agreement did not state demotion could be used.
2. His long service made him eligible for the higher-rated work which he had reached.
3. The company agreed to promote on the basis of seniority as long as employes had ability. He had seniority and ability for the better job.

Each incident given in this department is taken from a true-life grievance which went to arbitration. Names of some principals involved have been changed for obvious reasons. Readers who want the source of any of these cases may write to *Rock Products*.

The company justified its action in the following way:

1. The agreement contains a management's rights clause, which gives the company right to hire and fire, control the work force, and discipline for just cause.
2. This means the company can transfer, reassign or demote employes if it thinks they cannot do their jobs properly.
3. Before it had a written agreement, the company used demotion for discipline purposes.

Was the Company:
Right? ☐ **Wrong?** ☐

What Arbitrator Hale ruled:

"The company has agreed to recognize the principles of seniority. By such agreement, the company concedes that many of its other prerogatives are limited and restricted. The direction and control of the work force is restricted if such direction and control should conflict with rights and protections enjoyed by the employe because of his seniority. The seniority provisions give the senior employe a substantial degree of job security. If the company could, by demotion, take away a job secured through seniority and place the worker in a lower classification, his job security would be impaired, if not nullified. The management rights clause cannot be used as carte blanche to defeat one of the other basic aims of the agreement. Driver should be reinstated to his former position."

(Continued on page 24)

Wide Range of Products with TELSMITH Equipment

Lambert Bros.-Ralph E. Mills & Gorman, Inc. flexible crushed stone plant, Morgantown, W. Va., is producing 450-500 tons per hour of the following sizes —

for the U. S. Corps of Engineers' Sutton Dam and Hildebrand Dam: 6" x 3"; 3" x 1½"; 1½" x ¾"; ¾" x 4 mesh; and minus 4 mesh sand.

...in addition, a variety of sizes for black top plants, ready-mix concrete plants, building block plants, agricultural lime, and mine dust.

Plant was designed by Rish Equipment Company, Telsmith Distributor, Roanoke, Va., under supervision of Mr. W. S. Russell, Vice Pres.

Telsmith Equipment in this plant is listed below. Send for Bulletin 266.

▲ Telsmith 48-FC Gyrasphere Secondary Crusher

◀ Telsmith 42 x 48 Jaw Crusher and one of two Telsmith 48" Heavy Duty Apron Feeders

▼ General view of plant which has six 5' x 12' Telsmith Vibro-King Screens

Q-37

SMITH ENGINEERING WORKS

508 E. CAPITOL DRIVE — **MILWAUKEE 1, WISCONSIN**

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LABOR RELATIONS

(Continued from page 22)

Must you reassign an employe the day he returns from leave of absence?

What Happened:

BURT LEWIS, a regular employe, went to his department head and asked for six months off to go out West and straighten out the affairs of his father, who had just died. The leave was granted. Just before the expiration of the period, Lewis appeared, ready to work. But the department head was on vacation, and the man in charge told Lewis he didn't have authority to rearrange the work schedules, and Lewis would have to wait for the head man to return. Meanwhile, he wouldn't sign his re-employment slip. When the head of the department returned, Lewis went to see him, and was put to work at once. Shortly thereafter, Lewis filed a grievance, asking for pay for the two weeks he had waited. When the case went to arbitration, Lewis argued as follows:

1. Six months was the maximum he had requested, and no mention was made of a minimum period.
2. He was not told in advance that prior notice of his return was needed.

The company replied:

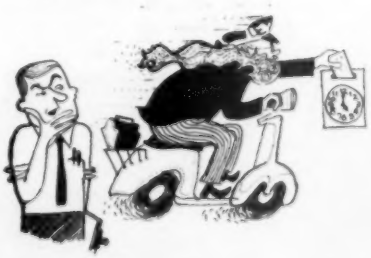
1. The leave and its terms was for the company to establish.
2. After such a long leave, the company needs notice of intention to return in order to integrate the employe into the work force.

Was the worker:
Right? ☐ **Wrong?** ☐

What Arbitrator Wolff ruled:

"It seems to me that after being away on leave of absence for close to six months, it would be unfair to impose upon this company an obligation to put Mr. Lewis back to work the very day he decided to return. Surely the company was entitled to arrange its schedules and operating plans so the reinstatement could be accomplished in a business-like manner. The company was justified in asking for reasonable notice. I find in the circumstances presented here the company was entitled to one week's notice for this purpose. Lewis could have provided notice by mail in advance of his return. The two weeks that the company took was not reasonably required as witnessed by the fact that he was reinstated in short order after the supervisor returned. Lewis should receive back pay for a one-week period."

If a worker said he was going to retire and then changed his mind, must you keep him on?



What Happened:

EARLY IN 1956, foreman Johnson asked Oscar Erferth, 68 years old, when he was thinking of retiring. Oscar said certainly not before June or July, when Social Security benefits were slated to go up. In March a new man was hired and trained to replace Oscar in the maintenance department. In August, Oscar was severed from the payroll as retired. Not so, said Oscar. I did not retire. But the company held that:

1. You told Mr. Johnson you were going to retire in July. Relying on that, we hired and trained somebody to replace you. You can't just change your mind now.
2. We've paid the new man some $3,000 in wages. You can't expect us to fire him and lose all it cost us to train him.

But Oscar pointed out:

1. I didn't make any definite commitment. I shouldn't be penalized for your mistaken assumption that I did.
2. As for the new man, since he was hired, another of the maintenance men was promoted. You now have only the number of maintenance men you've always had. In addition, there's so much work that the man you promoted has been putting in overtime on his old maintenance job.

Was the worker:
Right? ☐ **Wrong?** ☐

What Arbitrator Howard ruled:

"The testimony cannot be made the basis for a specific commitment by Mr. Erferth that he was going to retire at any particular time. Perhaps he should have been more careful to make it clear that he was not committing himself in the matter if he did not intend to so commit himself. On the other hand, the company representative should have been certain that the employe was committing himself to a promise to retire at a particular time. The burden is clearly upon the company, or Mr. Johnson on its behalf, to show that it had a definite commitment by Mr. Erferth to retire, and at a particular time, before it can claim to have relied on such a commitment to its detriment in such a way as to preclude the employe from denying it, and thus justify a discharge of the employe. Your arbitrator is unable to find any sufficiently specific commitment by Mr. Erferth to retire at any particular time to justify the company in relying on what was said as a basis for sustaining a discharge."

END

Any way you look at it... No Multiwall can top the Crown Stepped-End in performance.

Look at the valve. Examine the stepped corners. Observe the half valve insert ... the full diamond fold.

Anywhere you look, the Crown Stepped-End bag proves itself to be one of the biggest steps forward in Multiwall packaging in recent years. Here are six big advantages you get with Crown Stepped-End:

STRONGER: Stepping the plies offers a stronger bond than sewn bags, reduces chances of breakage by sudden blows.

MORE FLEXIBLE: Stepped corners and full diamond fold give bag more flexibility, reducing breakage.

EASIER VALVING: Half valve insert and full diamond fold make one-hand valving possible, speeds production.

POSITIVE CLOSURE: Positive closure on corner opposite valve prevents blow-out while valving.

EASY HANDLING: Crown's Stepped-End, when filled, makes a compact square package, stacks better, handles easier.

PRINT BOTH ENDS: Stepped-End allows you to print *both* ends, as well as the face and gusset—thus providing more advertising area for your brand design or message, easier identification in storage.

Our salesmen are supplied with sample Stepped-End bags which they will be glad to demonstrate in person. Call or write:

CROWN ZELLERBACH CORPORATION

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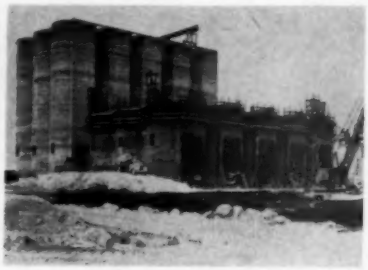
INDUSTRY NEWS



Work proceeds on Lehigh's plant in Everglades

LEHIGH PORTLAND CEMENT CO., Allentown, Pa., expects completion late this spring of its $24 million plant in the Florida Everglades. Installation has been progressing (left photo) on the two 12 x 475-ft. rotary kilns which will have a combined capacity of 2,500,000 bbl. Coral rock reclaimed from the Everglades will provide the basic raw material.

The storage silos in the photograph at right represent another major phase of the plant's construction. The two banks, containing 15 silos each, will have a total storage capacity of 450,000 bbl. Each of the silos is 32 ft. diam.

Five railroad tunnels pass beneath the silos, an arrangement which permits loading of a 400-bbl. car directly from a silo bottom in 5 min.

Locates calcium borate

KERN COUNTY LAND CO., San Francisco, Calif., has located substantial amounts of calcium borate on leases in the Mojave Desert. According to George C. Montgomery, president, a potential market for the material exists in connection with the government's high energy fuel program. Cores have been taken to determine the extent of the deposits. Government agencies have shown interest in forwarding search for calcium borate (colemanite) and in developing its necessary processing, Mr. Montgomery said.

Plans $4 million outlay

MARQUETTE CEMENT MANUFACTURING CO., Chicago, Ill., has scheduled improvements for its Rockmart, Ga., plant which will cost about $4 million. These are to be cost-saving improvements and will not affect production capacity. New raw and finish grinding facilities will be installed, in addition to a new storage shed and overhead crane.

American Aggregates buys gravel company

VANATTA GRAVEL CO., Newark, Ohio, subsidiary of Newark Asphalt Paving Co., has been purchased by American Aggregates Corp., Greenville, Ohio. Taking possession February 1, the new owners intend to expand the operation. All Vanatta personnel will continue with American Aggregates who will furnish the aggregates required in production of Newark Asphalt Co.'s paving material.

Sale of its gravel operation is part of its expansion plans in the road construction field, according to Herbert J. Murphy, president of Newark Asphalt Co. A second asphalt plant is being erected and will be in operation in early summer, he said.

Sells sand, gravel business

A. C. SAND AND GRAVEL CO., Arkansas City, Kan., has been sold by its owner, N. C. Dunn, to Myers Materials of El Dorado, Kan. The new owner plans to expand and modernize the plant to achieve production of specification materials.

Mr. Dunn started in the sand and gravel business in 1903 in Little Rock, Ark., then operated in Oxford, Kan., before going to Arkansas City in 1920. He said that he will now devote his time to his oil properties in Wilson and Greenwood Counties.

New crushing plant replaces old one

NEW YORK TRAP ROCK CORP., West Nyack, N.Y., serviced its customers from stockpiles in the West Nyack area while a new crushing plant was set up to replace the older installation. Three main buildings will house the milling and crushing operations. They will house dust collecting equipment, screens and conveyors. The project, which includes several smaller buildings on the seven-acre site, as well as a reinforced concrete tunnel, is scheduled for completion early this spring by the contracting firm of Fred L. Holt.

ECSA to meet in Denver

EXPANDED CLAY AND SHALE ASSOCIATION has chosen Denver, Colo., as the site of its midyear sessions. The dates of July 21-22 were set, with the Cosmopolitan Hotel designated as meeting headquarters.

At its annual meeting in Chicago, ECSA reelected officers for 1958: R. A. Utiger, Cinder Concrete Products, Inc., Denver, president; R. G. Hardy, Onondaga Brick Corp., Warners, N. Y., vice president and D. M. Groves, Shalite Corp., Knoxville, Tenn., secretary-treasurer.

Work week trimmed at potash division

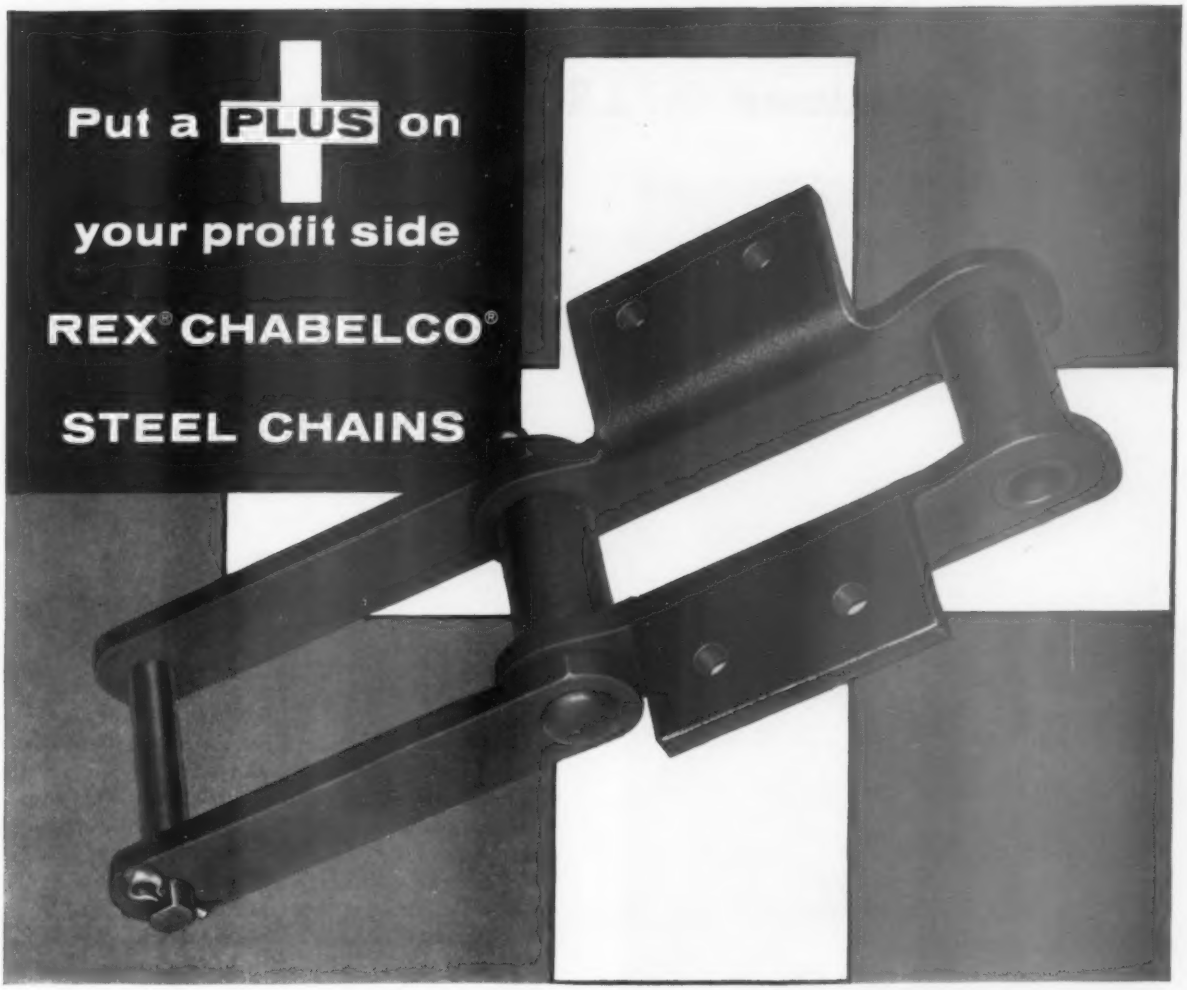
INTERNATIONAL MINERALS & CHEMICAL CORP., Chicago, Ill., cut the work week in its Potash division at Carlsbad, N.M., during February by 10 percent. March and April business was expected to compensate for the February falloff. Under the cutback, each individual worked alternate weeks of 40 and 32 hours.

Pavement yardage

AWARDS OF CONCRETE PAVEMENT for the month of January, 1958, have been classified by the Portland Cement Association as follows:

	Sq. yd. awarded:
Roads	3,971,925
Streets and alleys	1,320,087
Airports	195,862
Total	5,487,874

(Continued on page 31)



For your conveying and elevating needs, you'll find the *plus values* in Rex Chabelco Steel Chains an important factor in increasing productive capacity...eliminating the costly down time that cuts into your profit picture. They're precision-made...designed to provide the longest possible service life. Built-in extra working strength enables them to handle heavier loads.

UNSURPASSED "WEARABILITY"...Rex Chabelco Chains provide longest wear life. Balanced design of parts eliminates "weak spots"...strengths of side plates, bushing, rollers and pins are balanced with each other to assure lowest unit pressures in the chain joint.

PERMANENT PRESS-FIT CONSTRUCTION... these chains never "come apart." Precision-made parts, held to carefully controlled tolerances, are assembled into a permanent unit by heavy press fits... even when field assemblies are required. They're put together to stay.

EXTRA STRENGTH...all parts are carefully hardened in the most modern heat-treating equipment to provide maximum resistance to heavy shock loads. Built-in clearances between parts enable these chains to operate effectively in dusty, dirty operating conditions.

HUSKY ATTACHMENT LINKS... scientifically designed so that there are no sharp bends to set up life-destroying fatigue stresses. Attachment links are not "weak links" in Chabelco chains; they're as *extra* strong as the plain chain links...handle loaded bucket, flights and other attachments with ease.

There's a Chabelco steel chain to suit any conveying, elevating or power drive requirement...all with the built-in *plus values* that put a plus on your profit side.

For complete information, write for your copy of Bulletin 5766. CHAIN Belt Company, 4649 W. Greenfield Ave., Milwaukee 1, Wis.

CHAIN BELT

TURN PAGE

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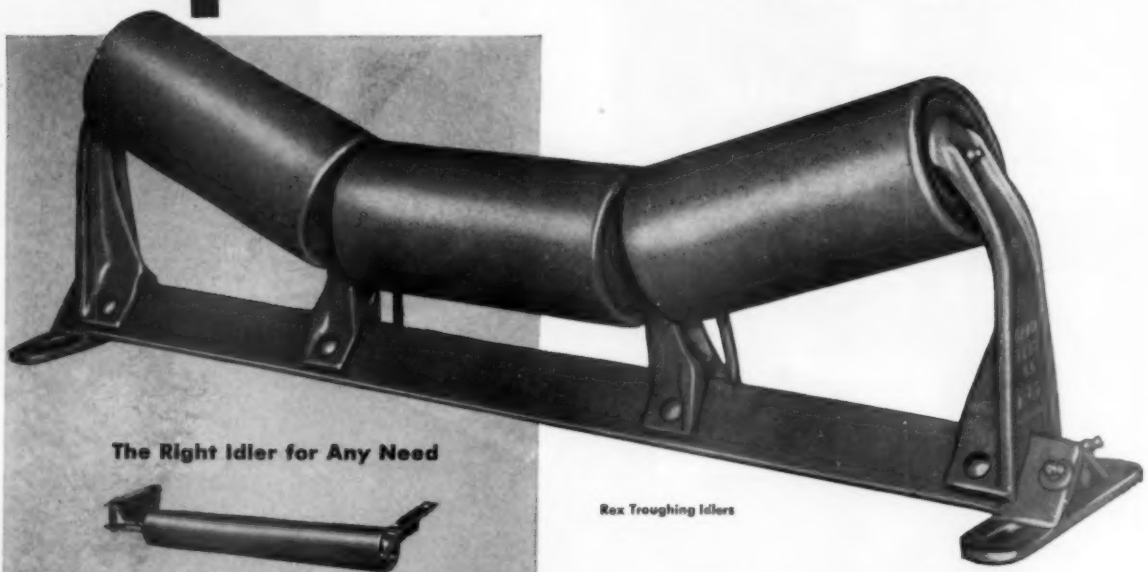
the PLUS values in...REX Belt Conveyor Idlers

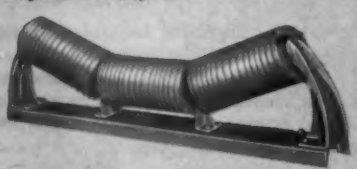


Rex Troughing Idlers

The Right Idler for Any Need

Return Idlers matched companion idlers to Rex Troughing Idlers... built with the same plus value features and advantages.

Belt Training Troughing Idlers assure automatic alignment of conveyor belt.



Impact Idlers installed under loading areas, these idlers absorb impact shocks... protect belt against cover lacerations and carcass ruptures.

Spiral Return Idlers unique spiral design, with over-shifting support of the belt, allows clinging material to drop through on return run, preventing build-up of materials on return idlers.

AND MANY OTHER STYLES

The Rex Rated Idler line...most complete in the industry ...has unequaled *plus values* that mean lower unit costs... longest life for both idlers and belt. They're *rated* for performance, guaranteeing you the best idler for your service requirements...simplest, quickest correct selection. You select from easy-to-use tables...and know, in advance, that the idlers you choose are right for you. No need to buy more than you need...no need to take less than you require!

Rex Rated Idlers are classified in four basic service groups: moderate-service line...standard-service line... heavy-service line...super-service line. Each has a broad choice of models to suit any operating requirement...built-in *plus values* that mean so much more for your money.

- High-grade antifriction bearings with ample radial and thrust load capacity.
- Positive and permanent bearing protection against dust and dirt, with minimum service attention.
- Heavy roll shells of unit construction...no joints to loosen or corrode.
- Long-life, sturdy steel frames with rigidly tight, shockproof brackets.
- Minimum servicing and easy maintenance.

For all the facts on Rex Rated Idlers and Selection Tables, write CHAIN Belt Company, 4649 W. Greenfield Ave., Milwaukee 1, Wis.

CHAIN BELT

Engineered Belt Conveyers • Belt Idlers • Pulleys • Terminal Machinery • Bucket Elevators • Feeders • Bulk Handling Conveyors •

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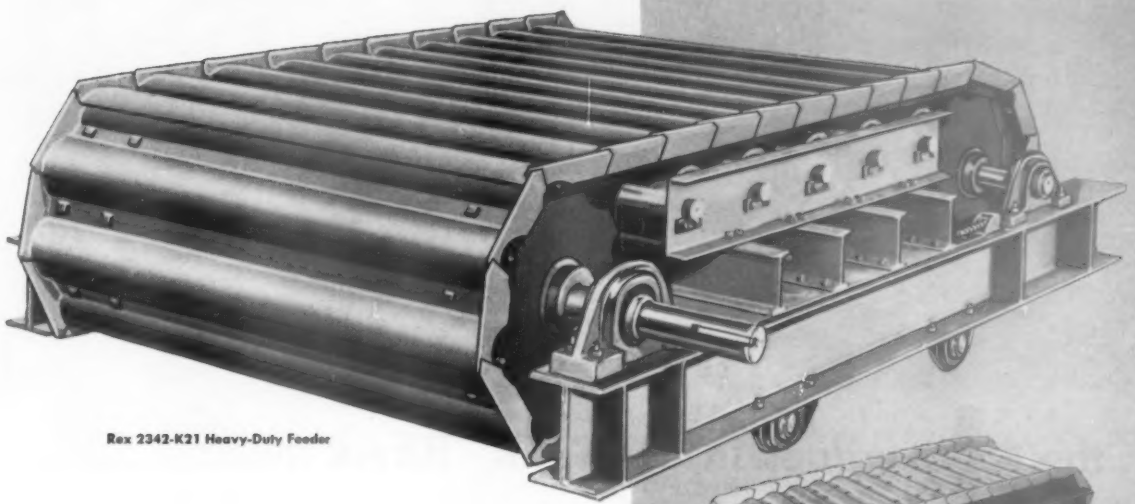
the PLUS values in...REX Apron Feeders



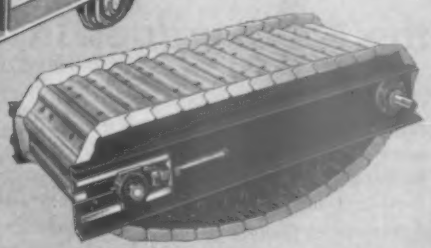
Rex 2342-K21 Heavy-Duty Feeder

To get maximum production at lowest unit cost...to assure steady, uniform material flow...to provide maximum life of equipment, you need the *plus* advantages of Rex Apron Feeders.

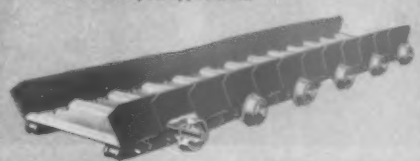
These efficient units accurately control material flow from hoppers and bins to crushers and conveyors. Their ability to provide a "metered" flow regardless of material size eliminates "flooding" or "starving" of subsequent operations. Control of impact or elimination of "scuffing" which occurs on some other types of feeders is an important advantage of Rex Apron Feeders that adds life to "fed" equipment. Conveyor belts are protected against ruptures and lacerations of damaging heavy impacts.

Rex Apron Feeders can be furnished completely self-contained or as "packaged" units...available in several basic styles to suit service requirements. The heavy-duty Rex 2342-K21 Feeder illustrated above is ideal for primary and secondary applications. Ruggedly built with an outstanding record for dependability and minimum maintenance, the Rex 2342-K21 Feeder relies on large-diameter rollers for support of the load, with chain mounted under leakproof aprons.

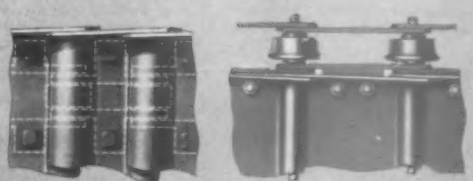
Other styles of Rex Feeders are available for all types of service. For complete information on Rex Apron Feeders, Apron and Pan Conveyors, and how they can help you get maximum production at lowest unit cost, write CHAIN Belt Company, 4649 W. Greenfield Ave., Milwaukee 1, Wis.



Style A leakproof apron with outboard rollers and equalizing saddles combines the advantages of minimum spillage, equal chain load distribution, and accessible working parts. Ideally suited for most low-impact applications.



Rex 331-K17 Apron Feeder used for installation under hoppers and bins to regulate flow of bulk materials in light-duty service.



Style A aprons with Type K or A chain attachments can be furnished as machinery parts for many applications.

CHAIN BELT

Conveyor and Drive Chains • Sprockets • Traction Wheels • Roller Bearings • Flexible Couplings • Spray Nozzles

TURN PAGE

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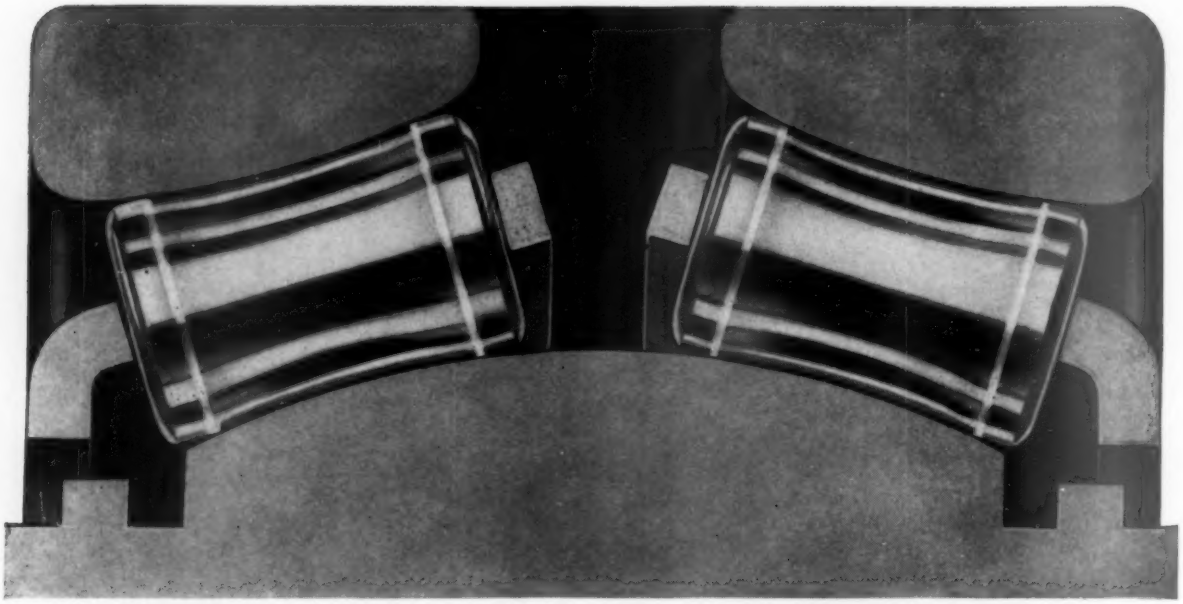
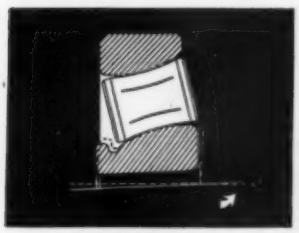


the PLUS *values in* SHAFER® BEARINGS

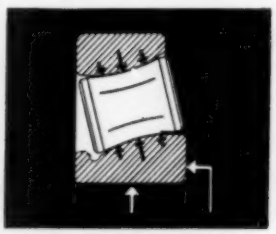
Combine the low-rolling friction of a ball...the high load-carrying capacity of a roller...and you have the *plus* advantages in Shafer Self-Aligning Roller Bearings. These bearings maintain their high load-carrying capacity under shock loads...continuous heavy-duty loads under misalignments.

Specifying Shafer puts an important *plus* in better service...longer life for your equipment. Remember, a Shafer Bearing will deliver its rated load capacity for *five years or more*. Compare this with other bearings with an average life rating of one year or less. Here's why!



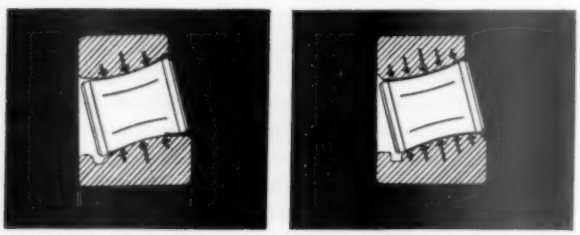
SHAFT DEFLECTION

Shafer design permits unrestricted compensation for shaft deflections, misalignment, shock loads...permits a total of 3° of misalignment.



RADIAL, THRUST OR COMBINED LOADS

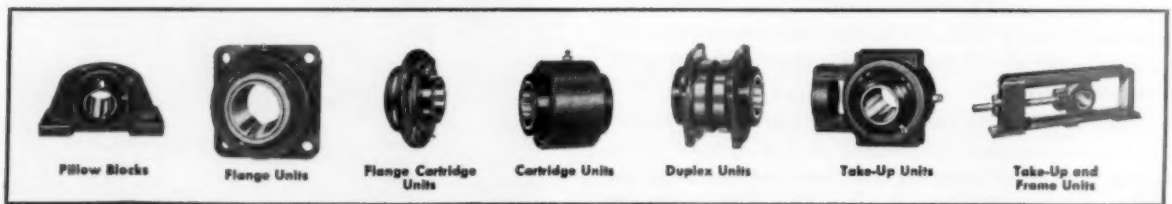
Shafer free-roller design handles radial, thrust or combined loads without loss of bearing capacity. There is no roller end wear...no need for guide flange at roller end.



Under Normal Load **Under Heavy Load**

SHOCK RESISTANCE

The high inherent elasticity of the bearing-quality alloy steel rollers and raceways provides maximum resistance to shock loads. The elasticity of these rollers and raceways permits compression under load and shocks... the contact area increases to fit the bearing area to the load requirement.



Pillow Blocks | Flange Units | Flange Cartridge Units | Cartridge Units | Duplex Units | Take-Up Units | Take-Up and Frame Units

For complete data on the plus advantages of Shafer Bearings, write for your copy of Bulletin No. 55. Chain Belt Company, 4649 W. Greenfield Ave., Milwaukee 1, Wis.

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CHAIN BELT

4649 W. Greenfield Ave., Milwaukee 1, Wis.

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NEW FOR YOUR CONVENIENCE...

FLEXCO

"25-PAK"

TWENTY-FIVE COMPLETE SETS OF FLEXCO HD BELT FASTENERS NOW AVAILABLE IN ONE EASY-TO-HANDLE ECONOMY BULK PACKAGE

There's no need now to carry several 10-set boxes to the job—every "25-PAK" contains 25 complete sets of FLEXCO Fasteners (bottom plates, top plates, clips, nuts and bolts) . . . enough FLEXCO Fasteners to join common belt widths (for example: one "25-PAK" box, size 1½E, will join a 36" belt.) Our savings from bulk-packaging are passed on to you!
Label on each "25-PAK" box has chart indicating the number of FLEXCO HD Fasteners to use for given belt widths.

Standard shipping carton contains four "25-PAK" boxes of one size fastener. Keep a supply of "25-PAKS" on hand. Easy to store and inventory, sturdy boxes and shipping cartons have many uses.

Ask your FLEXCO distributor or write to us for additional information.

Flexible
STEEL LACING COMPANY

4684 LEXINGTON ST. • CHICAGO 44, ILL.
FOR THE SPLICE OF A LIFETIME

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INDUSTRY NEWS

(Continued from page 26)

Perlite has good year

PERLITE INSTITUTE, New York, N.Y., in its annual report for 1957, indicated that sales of the lightweight aggregate reached new highs. According to Richard J. O'Heir, secretary-treasurer of the Institute, 53 percent of all plaster applied last year in the United States used perlite as the aggregate, compared with 44 percent in 1955. Total estimated sales of crude and expanded perlite for 1957 were estimated at $15.7 million. Output of the ultra-lightweight aggregate, produced by 84 plants in 30 states, maintained a level of 260,000 short tons.

For 1958, Mr. O'Heir predicted that perlite sales would hold their 1957 level. Trends indicating favorable long-term growth prospects for the industry, he noted, are: (1) a steadily rising demand for horticultural applications of perlite; (2) a greater demand for perlite insulating concrete, particularly for lightweight roof deck and floor fill constructions; (3) the increasing popularity of fire-retardant perlite plaster and (4) increased use of perlite as a loose fill insulation, paint filler, filtration medium, and in the manufacture of precast concrete sections, insulation board and other products.

Lime firm modernizes

THE WOODVILLE LIME PRODUCTS Co., Toledo, Ohio, is undergoing an extensive modernizing program which will continue through much of 1958. New equipment is being added and plant facilities are being redesigned to step up quality and efficiency, according to its vice president in charge of production, George C. Urschel, Jr.

Completion of Florida plant is set for May

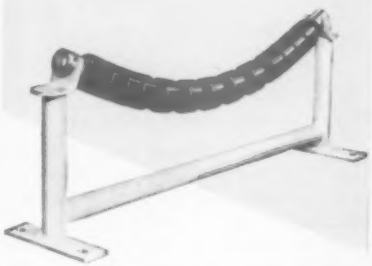
GENERAL PORTLAND CEMENT Co., Chicago, Ill., announced that it expects completion of its new 2,500,000 bbl. plant in Dade County, Fla., next month. This will raise the company's overall productive capacity to 18,800,000 bbl. of cement annually. Other plants are located at Tampa, Fla., Chattanooga, Tenn., and at Fort Worth, Houston and Dallas, Texas.

Earnings for 1957, said President Smith W. Storey, were $6,983,200, amounting to $3.36 per share based on 2,079,942 shares of common stock. Net sales were $37,762,700 in the period.

(Continued on following page)

We've been asked...

"What is the Joy Limberoller Belt Conveyor Idler?"



JOY LIMBEROLLER BELT CONVEYOR IDLER

Radically different from all other idlers, the Limberoller is a flexible steel cable suspended between two bearings . . . to which neoprene discs are molded . . . forming a single roll idler which turns on its own axis. This imparts a flexing action which is self-cleaning . . . prevents material buildup, a source of trouble with conventional idlers.

Supports the belt throughout its entire width . . . doesn't have the unsupported gaps left between the rolls like conventional idlers. Increases belt life 20% and more. Materials don't "bump along" from idler to idler, either.

Two bearings, instead of six They are up out of the dirt zone, not hiding down under the belt. Joy has never replaced a single bearing due to normal failure. Heard enough? There's more . . . get the whole story from ***Joy Manufacturing Company, Oliver Building, Pittsburgh 22, Pa.*** In Canada: *Joy Manufacturing Company (Canada) Limited, Galt, Ont.*

Write for free bulletin 160C-27

WSW L6531-160C

JOY ...EQUIPMENT FOR ALL INDUSTRY

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INDUSTRY NEWS

(Continued from preceding page)

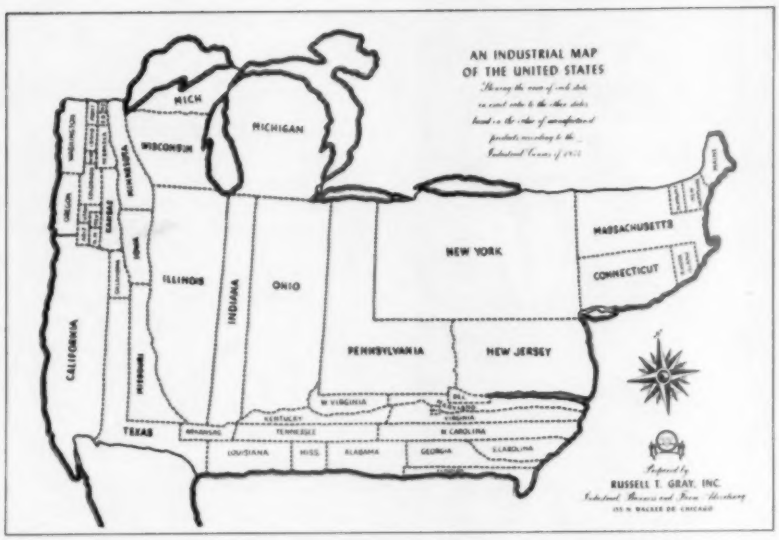
DuPont takes over Florida ilmenite mines

E. I. DUPONT DENEMOURS & CO., Philadelphia, Pa., took over operation of two Florida ilmenite mines from Humphreys Gold Corp., which had been working them for DuPont under contract. The mines, Trail Ridge and Highland, are located near Starke. DuPont resumed direct control of the mines to more closely integrate company operations.

Gypsum transport contract

NATIONAL GYPSUM CO., Buffalo, N.Y., has signed a 10-year contract with Boland and Cornelius, Buffalo lake vessel operators, to transport gypsum ore from its quarry at Tawas City, Mich. to the sites of planned new plants in Waukegan, Ill., and Lorain, Ohio.

Shipments will start next fall to the Waukegan plant site to build a stockpile in readiness for the plant's scheduled opening in the spring of 1959. The Lorain plant will be in production in the spring of 1960. Melvin H. Baker, National Gypsum chairman, said the two plants will require about 600,000 tons of gypsum ore per year.



Map helps to locate your market area

THIS CHART SHOWS THE RELATIONSHIP, marketwise, of each state to the others, based on the value added by manufacture to the industrial products of the United States. The relationship is based on the figures of the 1954 Industrial Census conducted by the Department of Commerce. Since 1947 the number of manufacturing establishments in the country rose to 288,144, an increase of 48,957 in the postwar period.

Map reproduced through the courtesy of Russell T. Gray, Inc.

(Continued on page 37)

Test gilsonite surfacing

AMERICAN GILSONITE CO., Salt Lake City, Utah, is experimenting with a roadsurfacing material which combines an oil base plasticizer, gravel and gilsonite. The first strip was laid near Grand Junction, Colo.

Calendar of Coming Conventions

April 11-12, 1958—
Texas Aggregates Association, Annual Convention, Gunter Hotel, San Antonio, Texas

April 17-19, 1958—
American Institute of Mining, Metallurgical and Petroleum Engineers, Pacific Northwest Regional Conference, Davenport Hotel, Spokane, Wash.

May 11-13, 1958—
Empire State Sand, Gravel and Ready Mix Association, Annual Meeting, Syracuse Hotel, Syracuse, New York

May 12-14, 1958—
National Lime Association, Annual Convention, Grand Hotel, Point Clear, Alabama

May 14-16, 1958—
National Industrial Sand Association, Annual Meeting, The Homestead, Hot Springs, Va.

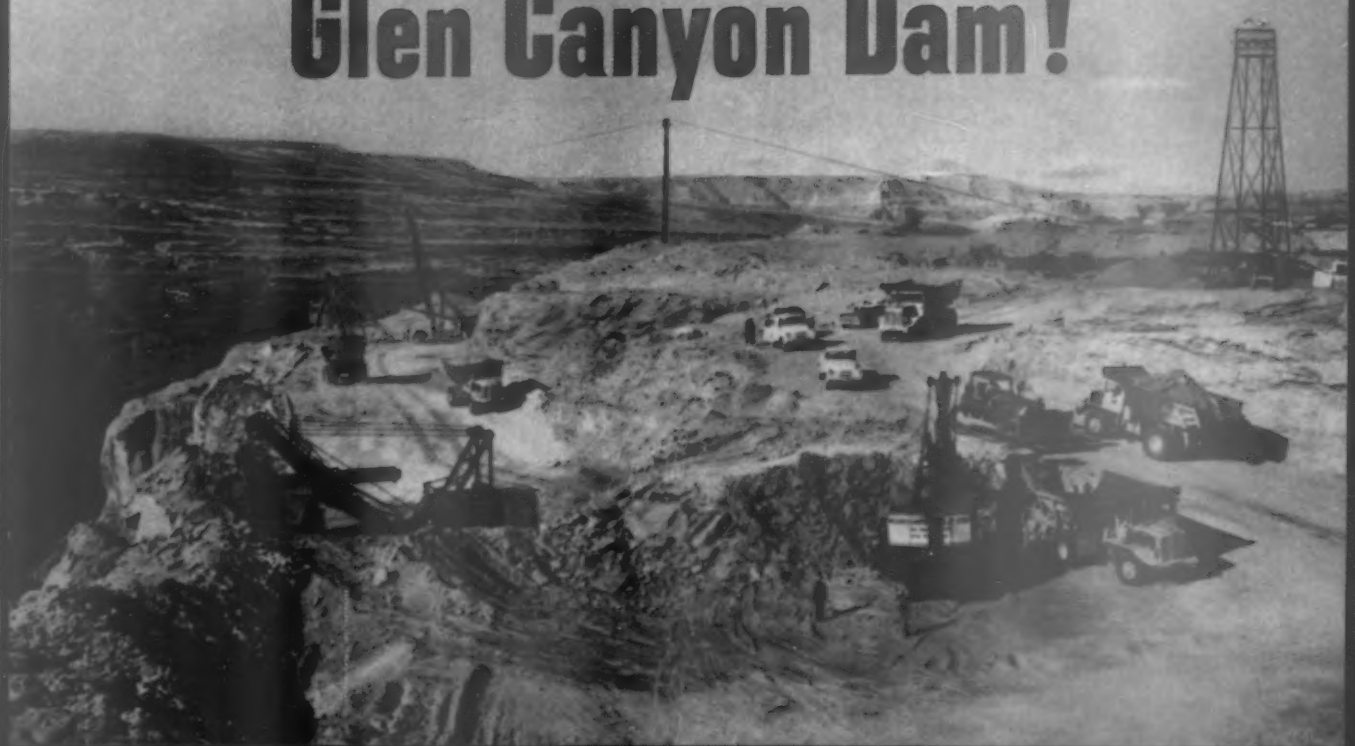
June 22-27, 1958—
American Society for Testing Materials, 61st Annual Meeting and Exhibit, Statler and Sheraton-Plaza Hotels, Boston, Mass.

July 21-22, 1958—
Expanded Clay and Shale Association, Midyear Meeting, Cosmopolitan Hotel, Denver, Colo.

July 23-25, 1958—
National Crushed Stone Association, Semi-annual Meeting, Board of Directors, The Homestead, Hot Springs, Va.

Sept. 30-Oct. 2, 1958—
National Sand and Gravel Association, Semi-Annual Meeting, Board of Directors, Tropicana, Las Vegas, Nev.

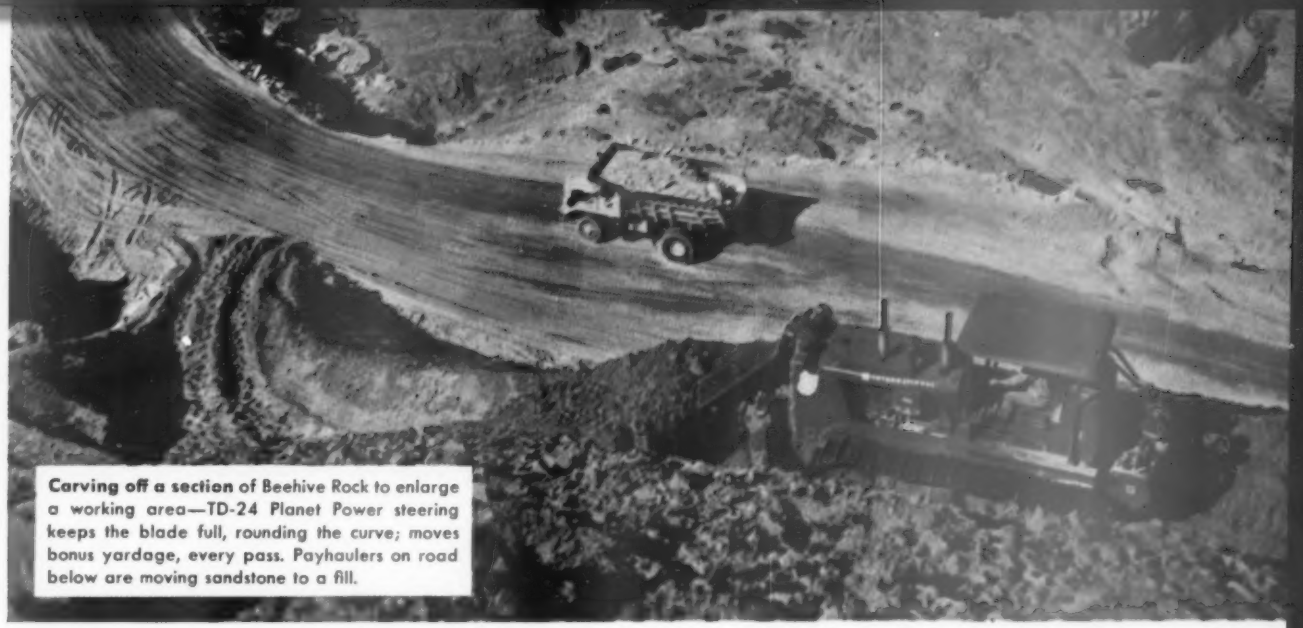
Merritt-Chapman & Scott mobilizes International® fleet to build colossal Glen Canyon Dam!



Noon time is inspection time as Merritt maintenance men, using International welder and shop trucks, roll up to Marion power shovel for fast, on-the-job service.

$108 million contract crawlers, haulers,

"95" Payhauler fleets keep busy on both sides of the 700-foot-deep canyon. These three units are hauling shovel-loaded rock from spillway excavation on the huge Glen Canyon Dam project.



Carving off a section of Beehive Rock to enlarge a working area—TD-24 Planet Power steering keeps the blade full, rounding the curve; moves bonus yardage, every pass. Payhaulers on road below are moving sandstone to a fill.

rolls on schedule with International® trucks and service!

8-passenger International Travelall, with hill-climbing four-wheel-drive, transports engineers and surveying equipment over rough terrain right to the dam site.

Here a rugged International truck with boom rig is used by electrical linemen to set up important transmission lines on the east side of the Colorado River.

On-the-spot maintenance. International shop truck moves in as shovel takes "fuel break" from International cab-forward tanker.

Big capacity. Six-wheel heavy-duty International truck with 5,000-gallon tank sprinkles water for compaction of road base.

Ready for any emergency. Merritt medical crews use International Travelall ambulances, complete with oxygen and first aid equipment, to provide mobile first aid. One stands by on each side of the river.

MERRITT-CHAPMAN & SCOTT CORPORATION is shooting to complete its $108,000,000 Glen Canyon Dam contract—biggest competitively bid job ever awarded to a single contractor—well ahead of the specified seven-year limit. A big fleet of International equipment helps keep this huge Bureau of Reclamation project on the Colorado River in Northern Arizona rolling at record pace.

Planet Power-steered TD-24 crawlers prove the worth of full-time live power on both tracks—blading bonus loads 'round the curves. Grade-beating "95's" high-balling rock show why a load-and-road-matched Payhauler® fleet—bonus-powered with turbo-charged diesel engines—belong on this tough, high-altitude job. International trucks are here, there, and everywhere—handling a multitude of different material, equipment, and personnel-carrying assignments.

And complete International parts and service is minutes close to insure high performance availability of every International machine.

Making ready for power. Conventional International truck with engine-driven auger sinks holes for transmission lines.

Track-roller lubrication of the TD-24's only needs to be done each 500 working hours. A cab-forward International truck, provides an efficient, mobile "service station." This compact International was chosen for exceptional maneuverability.

Prompt, performance-backing International service ... company and distributor... *keeps 'em rolling!*

The complete service resources for which International is world-famous are on the job for Merritt-Chapman & Scott—to help keep all International equipment rolling and producing!

It makes no difference that the job is remotely-located and 125 miles from the nearest rail-head. International, the distributor, and the dealer concerned have augmented existing parts stocks and facilities—have set up supply channels that assure on-the-spot parts availability.

Specialized distributor and company servicemen are so promptly available it's as convenient as a "down-the-street" service department.

YOU CAN HAVE THIS SAME big-capacity, specialized International performance—wherever you operate and on whatever scale—and with top performance-backing company, distributor and dealer service. See your International dealer or distributor for a demonstration of the construction equipment and motor trucks you need for high-balling your next job!

International Harvester

International Harvester Co., 180 N. Michigan Avenue, Chicago 1, Ill.

A COMPLETE POWER PACKAGE: Crawler and Wheel Tractors . . . Motor Trucks . . . Self-Propelled Scrapers . . . Crawler and Rubber-Tired Loaders . . . Off-Highway Haulers . . . Diesel and Carbureted Engines.

INDUSTRY NEWS

(Continued from page 32)

Sale of limestone firm to be effective May 1

LIMESTONE PRODUCTS CO., Menominee, Mich., has been sold to North Western-Hanna Fuel Co., effective May 1, 1958, according to Stephenson Smith, president of Limestone Products. Martin Burke, Jr., president of North Western-Hanna, advised that Mr. Smith will continue to manage the limestone firm when new ownership becomes effective, and that all personnel will be retained with the exception of A. T. Stainer, secretary-treasurer, who is retiring the end of May. Jesse J. Jacobsen is sales engineer and George Stich, superintendent.

E. P. Smith organized Limestone Products Co. in 1922 and it was affiliated with Central West Coal Co. prior to April 1, 1941 when the coal company was sold to North Western Fuel Co., the predecessor of North Western-Hanna Fuel Co.

Inspect phosphate source

A 15,000-ACRE PHOSPHATE DEPOSIT near Vernal, Utah, to which San Francisco Chemical Co. holds exclusive rights, was inspected by Governor Clyde of Utah, officials of the Federal Bureau of Reclamation, and executives of Stauffer Chemical Co., Western Phosphate, Inc., Mountain Copper Co., Ltd. and San Francisco Chemical.

It is anticipated that the deposit, 19 miles from Flaming Gorge, may become a major source of phosphorous within the next few years, after Flaming Gorge Dam is completed.

San Francisco Chemical Co., jointly owned by Stauffer Chemical Co. and Mountain Copper Co., Ltd., is operating an open-pit phosphate mining project near Leefe, Wyo. The Vernal deposit is being evaluated as an additional raw material resource and as a future reserve.

Johns-Manville centennial

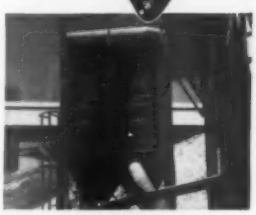
JOHNS-MANVILLE CORP., New York, N.Y., is observing its 100th anniversary this year, and throughout the organization centennial themes will run through special observances and regularly scheduled activities. The company, headed by A. R. Fisher, chairman and president, now has 26 plants, 88 sales locations and four mines. Annual sales volume is about $300 million. It was started as a one-man business by H. W. Johns in 1858.

(Continued on following page)

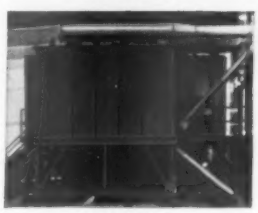
from coast to coast...

Norblo

Automatic Dust and Fume Collection delivers dependable heavy duty service at low cost



CALIFORNIA



MISSISSIPPI

MANITOBA

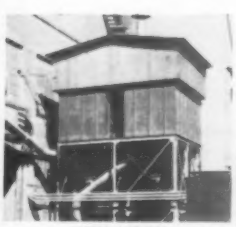
Of all the major types of dust and fume collection systems, the modern automatic bag type process as developed by The Northern Blower Company is the most widely useful and adaptable. Its use in important large scale production processes extends from coast to coast, and to foreign lands.

Norblo's experience in the removal of injurious or "nuisance" industrial air contaminants as well as salvaging valuable materials has been extensive in most industries. Complete systems are engineered to specific situations. Equipment can be supplied for intermittent use or for 'round-the-clock full capacity requirements. Fully coordinated functional design results in high efficiency, low cost of operation and maintenance.

Norblo engineers the complete installation with ample capacity for your needs, with wide adjustability and all the safeguards you may need. It will pay you to have Norblo engineers study your requirements. Write for Bulletin 164.

The Northern Blower Company
6408 Barberton • Cleveland 2, Ohio
Telephone: OLympic 1-1300

OHIO



NEW YORK

MEXICO

Norblo ENGINEERED DUST COLLECTION SYSTEMS
FOR ALL INDUSTRIES

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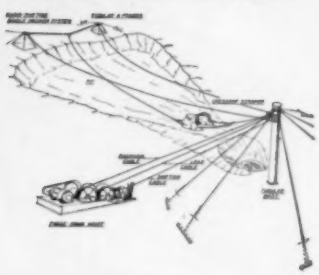
Three Sauerman Methods for Cutting Excavating and Reclamation Costs



DIGGING and CONVEYING

Rapid Shifting DragScraper—Using a rapid shifting bridle system, a 4-cu. yd. DragScraper digs 200 cu. yds. per hour from an 80-acre gravel deposit. Rapid Shifter permits selection of desired sizes from various pit locations to obtain a proper mixture.

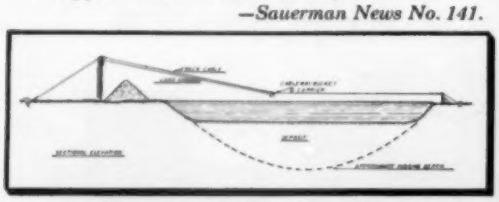
STORAGE and RECLAMATION

DragScraper—Clay reclamation from this 200-ft. storage shed is efficiently handled by a 1-cu. yd. DragScraper. From the controls of the Sauerman Hoist, the operator can reclaim to hopper from any part of the shed area. Winch at left provides power for lateral shifting of tail block and trolley on monorail.—*Sauerman News No. 140.*

UNDERWATER RECOVERY

Slackline Cableway—This cableway excavator is digging 50 ft. below water and delivering to a 60-ft. surge pile. Average haul is 600 ft. The slackline permits building a large stockpile due the height of discharge. (Drawing shows details of typical slackline installation.)

—*Sauerman News No. 141.*



Find out what the Sauerman Method can do for you

Give us details on your operation. Our engineers will give prompt recommendations and work with you to provide the best method for your requirements. Ask for Catalogs A (DragScrapers) and C (Slackline Cableways).

SAUERMAN BROS., INC. 630 SO. 28th AVE. BELLWOOD, ILL. Cable: CABEX—Bellwood, Ill

Crescent Scrapers • Slackline and Toutline Cableways • Durulite Buckets

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INDUSTRY NEWS

(Continued from preceding page)

Award radios at trade conventions

THE ROCK PRODUCTS BOOTH in the Conrad Hilton Hotel, Chicago, Ill. attracted visitors during the February conventions of the National Sand and Gravel Association and the National Crushed Stone Association, and during both shows guests were presented with tickets entitling them to a chance on transistor radios.

Drawings for the radios were conducted by ROCK PRODUCTS' Cleveland District Manager, Harold R. Dunlop, shown above with Chicago model Vicki Sue Linden. At the National Sand and Gravel Convention, radios were presented to winners C. W. Gelden, superintendent of Becker County Sand and Gravel Co., Lillington, N.C., and to Paul Revai, engineer at Smith Engineering Works, Milwaukee, Wis.

Winning tickets at the Crushed Stone show were held by J. D. Pfahl, purchasing agent for Bradford Hills Quarry, Inc., East Petersburg, Pa., and to Robert D. Graham, salesman with Manganese Steel Forge Co., Cleveland, Ohio.

Dealers have a problem in used equipment inventories

ASSOCIATED EQUIPMENT DISTRIBUTORS, holding their 39th annual meeting in Chicago, Ill., were warned by 1957 president, L. Miner Doolen, that the industry was facing rapidly growing inventories of used equipment. Mr. Doolen said that at the end of 1957 these inventories had climbed some 20 percent over 1956. He added that the survey showed sales of new and used equipment were down approximately seven percent all over the country, compared with 1956. Further, he remarked that profits in 1958 will be dependent upon distributors' trade-in practices and policies and their ability to move used equipment inventories on a sound basis.

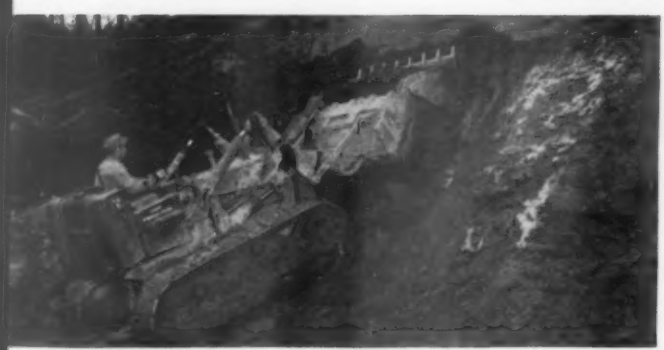
(Continued on page 40)

Enter 1408 on Reader Card

Replaces power shovel with 4-In-1

...gets versatility unlimited!

Digging, 'dozing, clearing, loading—this International Drott TD-9 4-In-1 replaces the limited-duty performance of a ⅜ cu. yd. power shovel. Tony Pacifico Company, Charleston, W. Va., practically builds a 100-ton-per-hour stone-quarrying operation around 4-In-1 versatility. Above, using bulldozer action, the 4-In-1 is removing overburden from a 60-foot-thick rock stratum. Owner formerly had to hire a dozer in addition to the power shovel to clear and strip!



Using a back-drag motion of the clam lip, with high-reaching 4-In-1 clamshell action, the Pacificos do a fast, low-cost job of bank-sloping—to forestall earth slides into the quarry. The exclusive, big-capacity clamshell also gives speedy "stand-and-fill" action of loose materials.

Pushing over a hardwood sapling, the Pacifico 4-In-1 is used for land-clearing ahead of stripping quarry overburden. For uprooting larger trees, a grubber blade can replace the 4-In-1 bucket—to apply the tremendous lifting power of exclusive Drott pry-over-shoe break-out action!

Sticky clay dumps clean—quits gumming the works and slowing overburden removal when the Pacificos use 4-In-1 clamshell bottom dumping. Opening the clam pulls sticky materials from bucket surfaces—gravity pull does the rest, to give the 4-In-1 positive self clean-out!

Prove 4-In-1 four-machine versatility unlimited! Move the machine-selector lever — try the built-in *clamshell, "carry-type" scraper, bulldozer and Skid-Shovel* actions. Compare exclusive pry-over-shoe break-out action for digging hard materials other rigs can't budge! See how exclusive Hydro-Spring swallows shock, protects performance. Ask your International Drott Distributor for a 4-In-1 demonstration.

International Harvester Company, Chicago 1, Illinois
Drott Manufacturing Corp., Milwaukee 15, Wisconsin

INTERNATIONAL® DROTT®

Send for free catalog today

International Harvester Company
180 North Michigan Ave., Chicago 1, Illinois

Gentlemen:
Please send 4-In-1 catalog literature checked:

☐ 1-yd. TD-6 (CR-640-H) ☐ 1½-yd. TD-9 (CR-627-H) ☐ 2⅛-yd. TD-14 (CR-635-H) ☐ 3-yd. TD-18 (CR-632-H)

Name_____

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✓Check every point...

OVERSTROM

VIBRATING SCREENS

and you'll go Overstrom!

Check all other vibrating screens of comparable quality and you'll go Overstrom for *performance*, for *"staying power"*, and for *economy* in performance and investment. Whether for light, medium, or heavy-duty work, Overstrom Vibrating Screens are noted for *rugged simplicity* in construction and operation.

Check these exclusive features —

✓ ***Involutely coiled springs*** — designed to provide perfectly controlled elliptical motions for peak screening efficiency at maximum throughput capacity.

✓ ***Vibrator tube assembly*** — bearings and shaft operate in a completely enclosed oil bath (instead of grease). Easy to start in cold weather. Easy to remove from clamp castings. Easy to service.

✓ ***Patented stretcher bar*** — keeps screen cloths under tension crosswise and facilitates changing.

We can prove these and many other advantages. For specific models, capacities, case histories, and prices, forward inquiry to ***Dept. RP*** (see address below).

OVERSTROM & SONS, INC.

2213 WEST MISSION ROAD • ALHAMBRA, CALIFORNIA

A SUBSIDIARY OF SUTTON, STEELE & STEELE, INC., DALLAS, TEXAS

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INDUSTRY NEWS

(Continued from page 38)

Expect borax earnings to show improvement

U. S. BORAX AND CHEMICAL CORP., Los Angeles, Calif., which opened up new mining and refining facilities last summer at Boron, Calif., anticipates profit improvement this year. The old plant at Wilmington, Calif., was operated during much of 1957 while the new plant reached full production, resulting in high costs. Now that the old plant is closed and a price increase is in effect (since January 1) the profit margin will improve, said J. M. Gerstley, president. The company's earnings per share in 1957 amounted to $1.15.

Gravel firm expands

B. V. HEDRICK GRAVEL AND SAND Co., Salisbury, N. C., has extended its operations into the ready-mix concrete and general construction fields with the purchase of the outstanding stock of Reed and Abee Inc., Hickory, N.C. and Oakley Construction Co., Asheville, N.C. The firms will be operated as Asheville Concrete Materials Inc. and Buncombe Construction Co. Inc.

E. A. Goodman Jr. has been elected president of the two firms. Other officers are Charles E. Brady, vice president; J. G. Northcott, secretary and Allen S. Johnson Jr., treasurer.

Portland cement production

PRODUCTION OF FINISHED PORTLAND CEMENT for the months of November and December 1957 have been reported by the U. S. Bureau of Mines.

November production totaled 25,014,000 bbl. a decrease of three percent from November, 1956. Mill shipments were 20,829,000 bbl., an eight-percent decrease, and stocks on hand were 23,188,000 bbl., a 45-percent increase. Clinker production amounted to 27,193,000 bbl., two percent more than the November, 1956 figure. The figures were supplied by 163 plants in 37 states and Puerto Rico.

December production totaled 22,386,000 bbl., an eight-percent decrease from the year-earlier period, whereas mill shipments were 16,834,000 bbl., a six-percent decrease. Stocks of 28,550,000 bbl. on hand December 31, 1957 were 27 percent more than on that date a year ago. Clinker production, totalling 26,008,000 bbl., represented a two-percent decrease over the December, 1956 figure. This production was reported by 160 plants in 37 states and Puerto Rico.

(Continued on page 42)

Enter 1474 on Reader Card

Out of the pit with 18-tons of shovel-loaded limestone comes the "65" Payhauler owned by Lee Crawford Quarry Co., Cedar Rapids, Iowa. The 1,200-foot haul includes a 400-foot 15% grade. The "65" was chosen on competitive demonstration.

"65" Payhauler® beats two competitors on tough, 50-hour demonstration

—for Lee Crawford Quarry Co., Cedar Rapids, Iowa

Veteran quarryman Lee Crawford invited three makes of off-highway haulers to go into his pit and "roll up their sleeves." He wanted hauling that could match the crushing efficiency of his newly-equipped plant which is as nearly perfect as could be built.

One make of hauler could not match crusher capacity. Another kept the monkey wrenches busy. Winner of the 50-hour test: the International "65" Payhauler!

"Perfect Payhauler performance made our choice easy," states Plant Superintendent Kenneth Mercer. "The '65' hauled bigger loads easily up the 15% grade out of the pit. It dumped cleaner, and up to three times faster—and got away faster for shortest cycle time.

"With the '65', we have achieved our plant efficiency goal."

Try the exclusive high reverse and "zip-around" power steering—that give 18-ton "65" or 24-ton "95" regular pick-up truck spotting ease. Measure capacity-adding Payhauler get-away speed—and the fuel economy of its load-matched, turbo-charged diesel power. Measure super-fast Payhauler dumping speed. See your International Construction Equipment Distributor for a demonstration!

INTERNATIONAL® CONSTRUCTION EQUIPMENT

International Harvester Co., 180 N. Michigan Avenue, Chicago 1, Illinois

A COMPLETE POWER PACKAGE: Crawler and Wheel Tractors . . . Self-Propelled Scrapers . . . Crawler and Rubber-Tired Loaders . . . Off-Highway Haulers . . . Diesel and Carbureted Engines . . . Motor Trucks . . . Farm Tractors and Equipment.

International Harvester Company
180 North Michigan Ave.
Chicago 1, Illinois

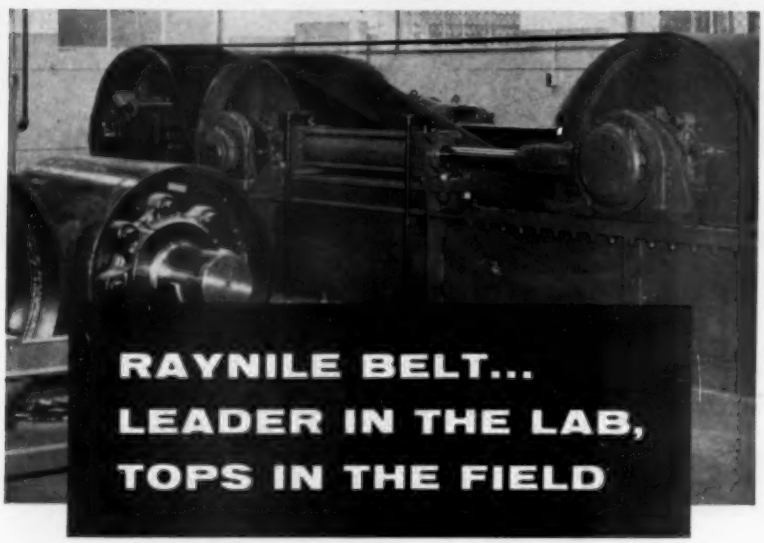
Gentlemen: Please send me a free copy of the new, fully-illustrated Payhauler catalog (Form CR-603-G).

Name_____

Street Address_____

City_____ State_____

50,000 lb. thrust load torture test for Raynile splice.



The first Raynile Belt installed by Hewitt-Robins in 1948 is still in service, with a record of extreme ruggedness; exceptional resistance to ripping and to impact; and improved troughing and training.

This is good reason why these Hewitt-Robins conveyor belts have become the FAMOUS NAMES ON THE BIG JOBS EVERYWHERE for handling all kinds of bulk materials:

RAYNILE; for operating tensions of 90 to 130 lbs. per inch per ply.

SUPER RAYNILE; for operating tensions of 150 to 200 lbs. per inch per ply, improved with miracle fabric to do jobs previously thought impossible.

RAYNILE SUPREME; with miracle fiber for tensions over 200 lbs., stronger and more flexible than steel.

Let the many years of Hewitt-Robins experience, engineering, and research in developing the best in conveyor belting benefit your operation. To find out how H-R products and services can help you, consult your classified telephone directory for the nearest H-R representative, or contact Hewitt-Robins, Stamford, Connecticut.

HR HEWITT-ROBINS

CONVEYOR BELTING AND IDLERS . . . POWER TRANSMISSION DRIVES
INDUSTRIAL HOSE . . . VIBRATING CONVEYORS, SCREENS & SHAKEOUTS

H-R Product Manufacturing Plants in Buffalo, N. Y. • Chicago, Ill. • King of Prussia, Pa. • Passaic, N. J. Amsterdam, Holland • Johannesburg, South Africa • London, England • Montreal, Canada • Paris, France

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INDUSTRY NEWS

(Continued from page 40)

New highway bill would add 2,102 miles to system

CONGRESSMAN CHARLES A. BUCKLEY, chairman of the House Committee of Public Works, has introduced a bill which would grant each state having a toll road on the Interstate System equivalent mileage to be classified as part of the Interstate System and thus be eligible for 90 percent federal aid. The practical effect would add 2,102 miles to the Interstate System and add about $2 billion to the cost of completing the system.

Under present designations, 15 states would get the following additional Interstate miles:

	Miles		Miles
Connecticut	98	New Hampshire	15
Florida	41	New Jersey	8
Illinois	120	New York	518
Indiana	151	Ohio	173
Kansas	184	Oklahoma	177
Kentucky	40	Pennsylvania	359
Maine	60	Virginia	35
Massachusetts	123	TOTAL	2,102

Mine operators to discuss hydraulically placed fill

THE DEPARTMENT OF MINING ENGINEERING at Montana School of Mines, Butte, will sponsor a symposium on the hydraulic emplacement of mine stope fill at the campus May 9 and 10. Assisting in arrangements are the Mining Association of Montana, Anaconda Co., American Institute of Mining, Metallurgical and Petroleum Engineers and the Montana Society of Engineers.

There will be sessions covering use and application of hydraulic fill in which the modification to mining methods that result from the use of this technique will be described. A discussion of the use of hydraulic fill for fighting mine fires and as a stabilizing factor providing regional support to ground adjacent to active mines will be held. Problems associated with conditioning sand and tailings for most efficient transportation, placement and drainage of the fill after it is in place, and results of the most recent research into the design aspects of sand fill systems will be discussed. Industry representatives from Canada and all over the United States will attend.

New incorporation

RUSSELL AGGREGATES, INC., Russell, Ky., has been capitalized at $25,000 and will deal in shale, limestone, sand and gravel. Incorporators are R. D. Davis, John C. Vigor and Victoria Beckwith, Ashland.

(Continued on page 44)

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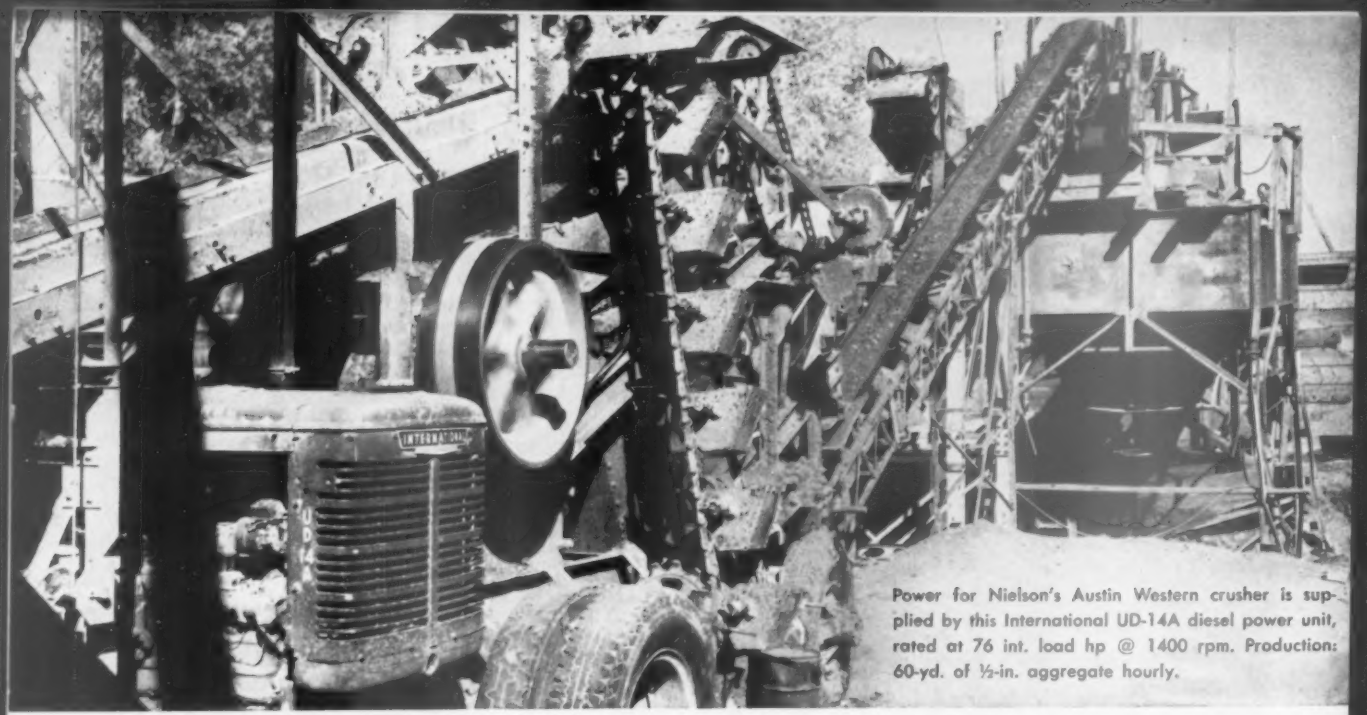

Power for Nielson's Austin Western crusher is supplied by this International UD-14A diesel power unit, rated at 76 int. load hp @ 1400 rpm. Production: 60-yd. of ½-in. aggregate hourly.

Colorado firm 100% International user for greater dependability, economy

For 11,200 hours this International UD-18A diesel has been driving 50 KW Palmer generator that operates four motors totaling 55 hp that drive water pump, sand washer, rock washer, and vibrating screen.

Power source for this Link Belt LS-85 dragline is supplied dependably and economically by an International UD-16 diesel.

Three long-life IH diesel power units operate 60-yd hourly crusher-washer plant for Nielson's Inc., for lowest cost

Rock crushing plants operated by Nielsons, Inc., near Delores, Colo., have one thing in common—International power. At one plant, for example, a UD-14A diesel powers the Austin Western crusher reducing stream bed gravel to ½-in. concrete aggregate size at 60-yd. hourly. A UD-18A diesel drives the 50 KW Palmer generator set. And a UD-16 diesel powers a LS-85 Link Belt dragline loading two haul units.

Owner Dick Nielson can tell you why without wasting words: "We feel we can't miss with power as economical and dependable as International. Take the UD-18A diesel on our generator as an example. In 11,200 hours this engine has only had a valve grinding job, yet we are driving 55 hp in electric motors from the unit continuously. That's why we have International power every place we can put one of these fine engines in our plants."

Reduce your risk of production losses or needless operating expense by checking up on the added dependability and economy offered by International diesels. Your nearby International Power Unit Distributor or Dealer can give you full details on all seven models. You'll find them ranging from 67.5 to 300 max. engine hp. And you'll get bonus service from both the IH diesel and the man who services and sells them. Call today.

INTERNATIONAL®

International Harvester Company
180 North Michigan Ave., Chicago 1, Ill.

CONSTRUCTION EQUIPMENT

A COMPLETE POWER PACKAGE: Crawler and Wheel Tractors . . . Self-Propelled Scrapers . . . Crawler and Rubber-Tired Loaders . . . Off-Highway Haulers . . . Diesel and Carbureted Engines . . . Motor Trucks . . . Farm Tractors and Equipment.

WE CAN TELL YOU JUST WHAT YOU'LL FIND

Don't just dig... and hope to find... Call SPRAGUE & HENWOOD, and for a nominal cost you'll know just what Mother Earth holds in store for you. SPRAGUE & HENWOOD's own manufacturing facilities, and more than seventy years of field experience, enables them to obtain the highest percentage of core from almost any formation. From this core you can obtain accurate geologic information... no guesswork.

Write to SPRAGUE & HENWOOD, INC. today for an estimate, giving complete information, and it will be on its way to you just as quickly as possible... without obligation.

SPRAGUE & HENWOOD, Inc.
SCRANTON 2, PA.

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INDUSTRY NEWS

(Continued from page 42)

A reader's response

January 20, 1958

Dear Mr. Lindsay:

I think you have completely misrepresented the present position of the cement industry in your January forecast article. Therefore, I regard it a distinct disservice to our industry.

This is intended to be constructive criticism.

Sincerely yours,
W. A. Wecker
President
Marquette Cement
Manufacturing Company

The highway program

January 17, 1958

Dear Mr. Lindsay:

I really believe that nobody should apologize because there is a certain amount of lack of understanding of the Interstate Highway program. Certainly the Public Works Committees of the Senate and the House are in a stage of delightful confusion as to what is going on; Secretary Weeks made it clear in his testimony that there is a lot about the program that he neither understands nor is going to try to understand; BPR staff members obviously don't understand all about the program, or they would not have misled Joe Bell (see ROCK PRODUCTS, December, 1957) about NHUC policies—honestly, I am sure; they thought they were right. I don't see why BPR is so extremely sensitive to any comment which says that some original estimates about the program haven't panned out. I think that was inescapable; there isn't any human genius who could have foreseen the future.

I think we should all stop apologizing about not knowing everything about the program and should not feel that critical comments are based on personal bias and prejudice. Here is the greatest public works program ever launched in the entire history of mankind. There is plenty of room for differences in points of view. I know you will join me in these thoughts.

Sincerely yours,
Vincent P. Ahearn
Executive Secretary
National Sand and Gravel
Association

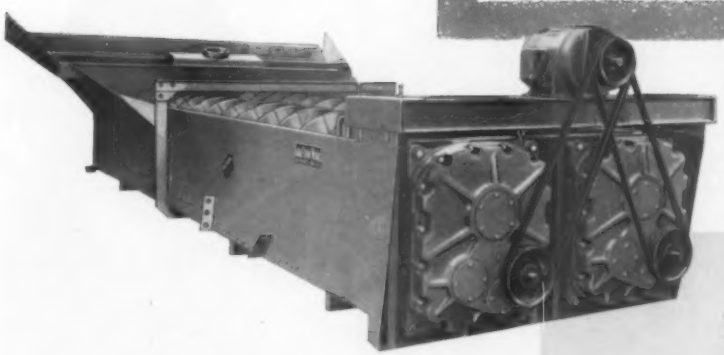
•

CLEVELAND LIMESTONE CO., Cleveland, Ohio, has been organized with 250 shares of no par common stock.

END

EAGLE EXPERIENCE DOES IT AGAIN!

. . . this time a BETTER DRIVE for Screw Washer Units!

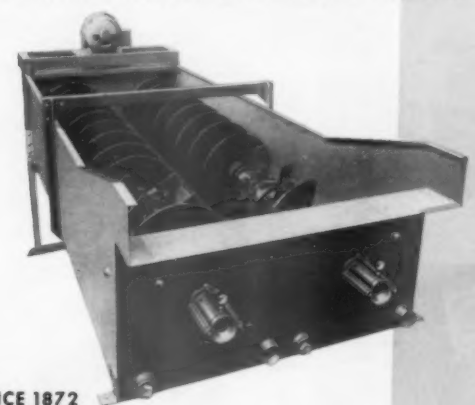


After thorough pilot plant tests and in the field, Eagle engineers developed a drive that will cut maintenance costs and save you money. It also provides easily varied screw speed to meet various mesh sand specifications.

The new drive is totally enclosed and runs in an oil bath as does an auto transmission.

It is more direct and positive and makes better use of available power. The steel helical cut gear train is driven through a V-belt drive with motor centered directly above gear case for better balance.

This new drive is now standard equipment on Single and Double Screw Fine Material Washer-Classifier-Dehydrators and on Single and Double Screw Coarse Material Washer-Dewaterers.



Eagle pioneered the screw washer and every major design improvement since then. This new drive is another "feather in Eagle's cap" and means greater savings for aggregate producers. Send for Catalog 58.

SINCE 1872

EIW

EAGLE IRON WORKS

EAGLE IRON WORKS

137 HOLCOMB AVE., DES MOINES, IOWA

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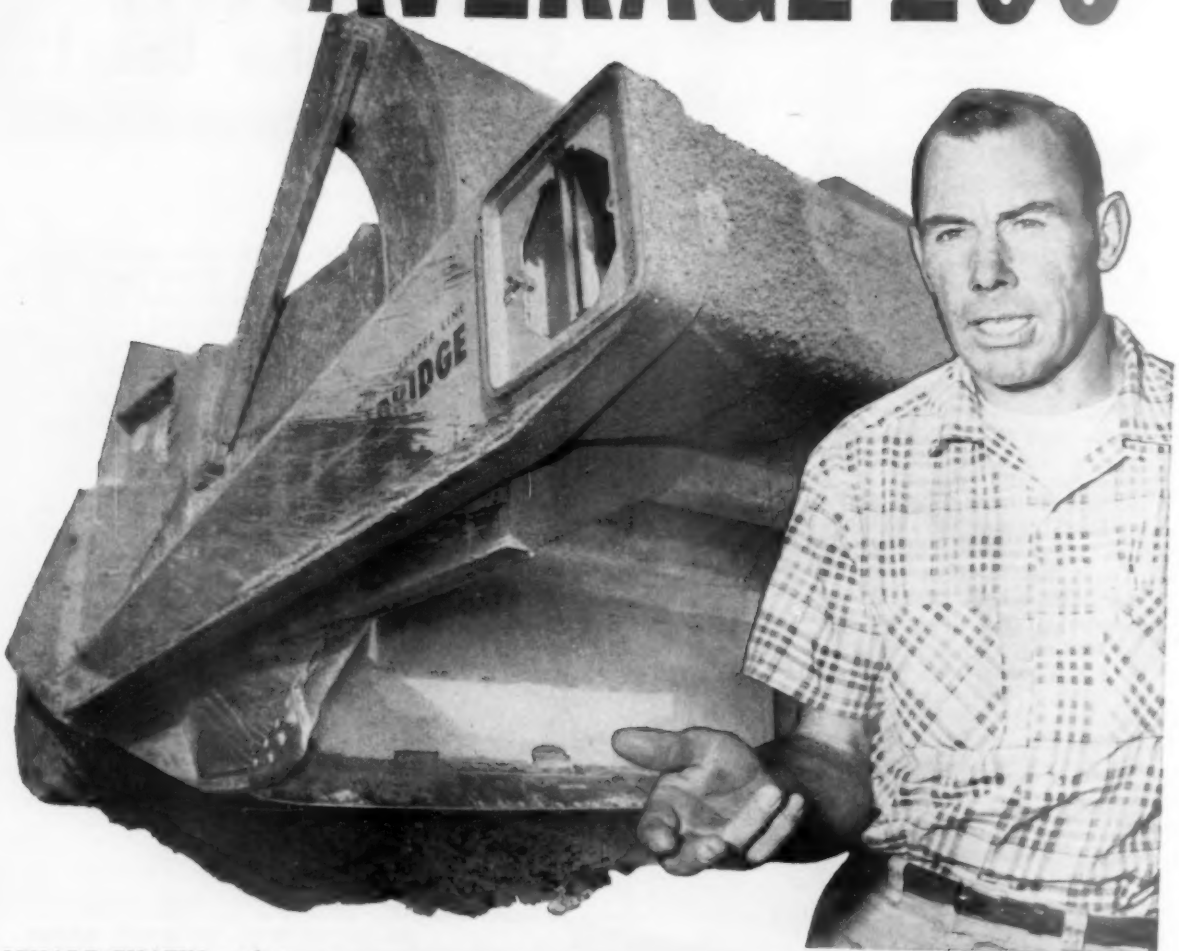
ESCO CUTTING EDGES

AVERAGE 200



RICHARD CHAFIN, project engineer of Madonna Construction Company, uses ESCO cutting edges to keep maintenance costs low.

HOURS OF SERVICE
...on each side!

The Madonna Construction Company switched to *ESCO* cutting edges after on-the-job tests that "represented every known strata in southern California." Richard Chafin, project engineer, relied on *ESCO* bits to move 200,000 yards of sandy gravel, studded with 36-inch donickers... and in doing so compiled maintenance figures that showed *ESCO* bits averaging 200 hours before reversing.

Cutting edge longevity is only half the story. Bits that last longer mean less down time, lower charges against machinery idled through frequent bit changes. *ESCO* cutting edges, Chafin found, maintained the 150 cubic yard-per-hour rate that he considers essential if earth moving is to pay.

What *ESCO* products did for this project engineer, they can do for you. Put *ESCO's* durability to work for you. Use *ESCO* cutting edges —they'll save you time, when time is money.

See your nearest ESCO dealer or write direct.

ELECTRIC STEEL FOUNDRY COMPANY
2185 N. W. 25TH AVE. • PORTLAND 10, OREGON
MFG. PLANTS AT PORTLAND, ORE. AND DANVILLE, ILL.
Offices in Most Principal Cities
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PEOPLE

IN THE NEWS

E. Phil Gemmer 1958 NSGA president

E. PHIL GEMMER, president of Texas Construction Material Co., Houston, Texas, and newly elected president of the National Sand and Gravel Association, for many years has taken an active role in the affairs of the Association. He first was elected by members of his district as representative on the board of directors, later became a member of the executive committee, and then secretary-treasurer. In 1957, he was elected vice president.

A native of Williamsport, Ind., Mr. Gemmer moved to Houston early in 1909. After graduating from Houston High School, he entered Rice Institute, where he studied both architecture and engineering. He joined Lone Star Cement Corp., Houston, as a laboratory assistant, after six years in the automotive field. In 1924, he started as construction foreman at the Columbus plant of Gemmer & Tanner, in which his father was a partner. Subsequently he became office manager, salesman, sales manager, vice president and director. In 1946, he was named president of Texas Construction Material Co., which was formed in 1929 through the consolidation of Gemmer & Tanner and the Beaumont Building Material Co. Mr. Gemmer's son, Richard Gemmer, is director of personnel and public relations.

Mr. Gemmer is a member of the Natural Resources Committee of the U. S. Chamber of Commerce, the Highway Committee of the Houston Chamber of Commerce, and the Salesmanship Club. He is a director of East Texas Chamber of Commerce.

NSC representative

CLINTON H. HOCH has been appointed representative for the Cement, Quarry and Mineral Aggregates, Mining and Coal Mining Sections of the National Safety Council, Chicago, Ill. He succeeds G. G. Grieve, who has been named director of the labor division. Mr. Hoch, a native of Punxsutawney, Pa., has had wide experience in safety and mining.

Quality control engineer

JAMES F. MORGAN, JR., has been named quality control engineer of the Buffalo Crushed Stone Corp., Buffalo, N.Y. A native of New York, N.Y., and a graduate of Union College, Schenectady, N.Y., with a B.S. degree in civil engineering, Mr. Morgan has been associated with the highway construction industry for the past 20 years. He has served as an engineer with the city of Ithaca, N.Y., and later was sales engineer for the American Vitumuls and Asphalt Co.

Public relations manager

TED JOHNSON has been appointed manager of the new public relations department of Ideal Cement Co., Denver, Colo. For the past five years Mr. Johnson has been editor of the "Mixer", house organ of Ideal Cement Co. White & White, public relations counsel of Denver, will assist Mr. Johnson in establishing this department.

George Lunday retires

GEORGE ALFRED LUNDAY has retired as assistant sales manager of the Montana division of Ideal Cement Co., Denver, Colo., after 49 years of service. Born in Pittsville, Wis., he started his career in the cement industry in 1909 with the Three Forks Portland Cement Co. at Trident, Mont., starting as a construction worker and advancing to timekeeper and then chief clerk for the sales and operating departments. When the sales department moved to Butte, Mont., Mr. Lunday was placed in charge. He returned to the Three Forks Portland Cement Co. as salesman after service in the Army during World War I, and later became assistant sales manager for Montana, western North Dakota and northern Wyoming.

Arkansas Cement president

EDWARD N. HENDERSON has been elected president of the Arkansas Cement Corp., Shreveport, La., a subsidiary of the Arkansas-Louisiana Gas Co. Formerly vice president, he succeeds the late J. C. Hamilton who was also president of the Arkansas Louisiana Gas Co. Don W. Weir, executive vice president of the Arkansas Louisiana Gas Co., has been elected to the board of directors of the Arkansas Cement Corp.

Mr. Henderson also is a vice president and chief engineer for the Arkansas Louisiana Gas Co., and vice president and member of the board of directors of Arkla Air Conditioning Corp. He holds degrees in mechanical engineering and industrial management from Alabama Polytechnic Institute, Auburn, Ala.

Other officers of the Arkansas Cement Corp. are W. T. Murphy, Jr., Texarkana, Texas, chairman of the board, and Frank L. Holleman, Shreveport, La., secretary and treasurer.

(Continued on page 54)

Rides with the bit through rock ...speeds big bore hole cuts...

GARDNER-DENVER

"MOLE-DRIL"*

* TRADE-MARK

Here's added power for your rotary rig—hard-hitting, in-the-hole power. "Mole-Dril" speeds blast hole drilling in open rock cuts . . . and deep hole drilling in hardest rock.

It's easy to use—the "Mole-Dril" screws directly onto the bottom of standard drill pipe . . . a tungsten-carbide "X" bit screws directly onto drill tappet. That's all the "make-ready" it takes to send the "Mole-Dril" through rock.

It's powerful—"Mole-Dril" delivers more foot-pounds of energy to the bit than any other drill of its size. Every pound of hammer energy is transferred directly to the bit.

It's rugged—the "Mole-Dril" has only three moving parts, nine major parts. This simple, rugged construction gives the "Mole-Dril" lasting deep hole drilling durability.

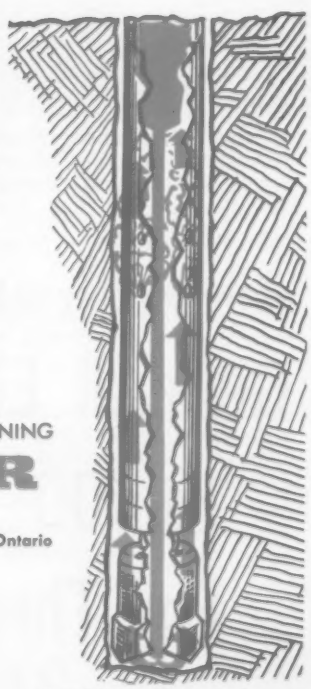
Two models available:

Model AM4 for drilling 4¾" diameter hole.
Model AM6 for drilling 6½" diameter hole.
Write for bulletin.

"Mole-Dril's" positive hole cleaning action

Air at full line pressure flows through drill's air blowing tube directly to bit . . . this direct air stream keeps cutting face clean regardless of drilling depth.

Drill exhaust air passes out up-cast air ports and gives cuttings an additional out-of-the-hole boost.



ENGINEERING FORESIGHT—PROVED ON THE JOB
IN GENERAL INDUSTRY, CONSTRUCTION, PETROLEUM AND MINING

GARDNER-DENVER

Gardner-Denver Company, Quincy, Illinois
In Canada: Gardner-Denver Company (Canada), Ltd., 14 Curity Avenue, Toronto 16, Ontario

Enter 1417 on Reader Card

GIFFORD-HILL CO., INC., operates three General Electric locomotives at their Irving, Texas, SW Construction Materials Div. Plant No. 1. The 45-tonner above has been in operation since 1953 hauling heavy loads and saving money for the customer.

THE GRANITE ROCK COMPANY in Aromas, Calif., moves up to 6,000 tons of rock a day with their powerful G-E 65-ton loco-

PUTTING PLANT TRACKS TO WORK . . .

General Electric Locomotives Help Move 13,500 Tons of Crushed Rock a Day For Three Rock Products Companies

motive installed in 1951. Unit operates more than 2000 hours a year . . . has required no major maintenance.

SERVTEX MATERIALS COMPANY moves approximately 100 railroad cars a day at their New Braunfels, Texas, quarry and rock crushing plant. They have sharp curves and grades up to 3 percent. Servtex finds that their G-E 65-tonner can stand the pace.

The operations carried on by the three rock products companies pictured above have two things in common: getting rock in for processing . . . getting finished material out and on its way to customers. These three companies rely on General Electric industrial locomotives for these vital operations. They agree that:

G-E LOCOMOTIVES SAVE MONEY because they require little maintenance, use low-cost fuel, have no complicated, expensive-to-repair gears and transmissions, and are available up to 95 percent of the time for just about the most rugged duty ever demanded of any materials handling vehicle.

G-E LOCOMOTIVES ARE FAST AND EFFICIENT. A press of the starter button puts a G-E diesel electric on the job. High tractive effort—just the kind of power needed for handling heavy material—is readily available. Locomotives are doubly efficient because they let these companies put their existing tracks to more profitable work.

G-E LOCOMOTIVES GIVE LONG LIFE because General Electric industrial haulage specialists work with you to select the right locomotive to meet your haulage requirements. Complete parts and parts service is as close to you as your nearest G-E Apparatus Sales Office.

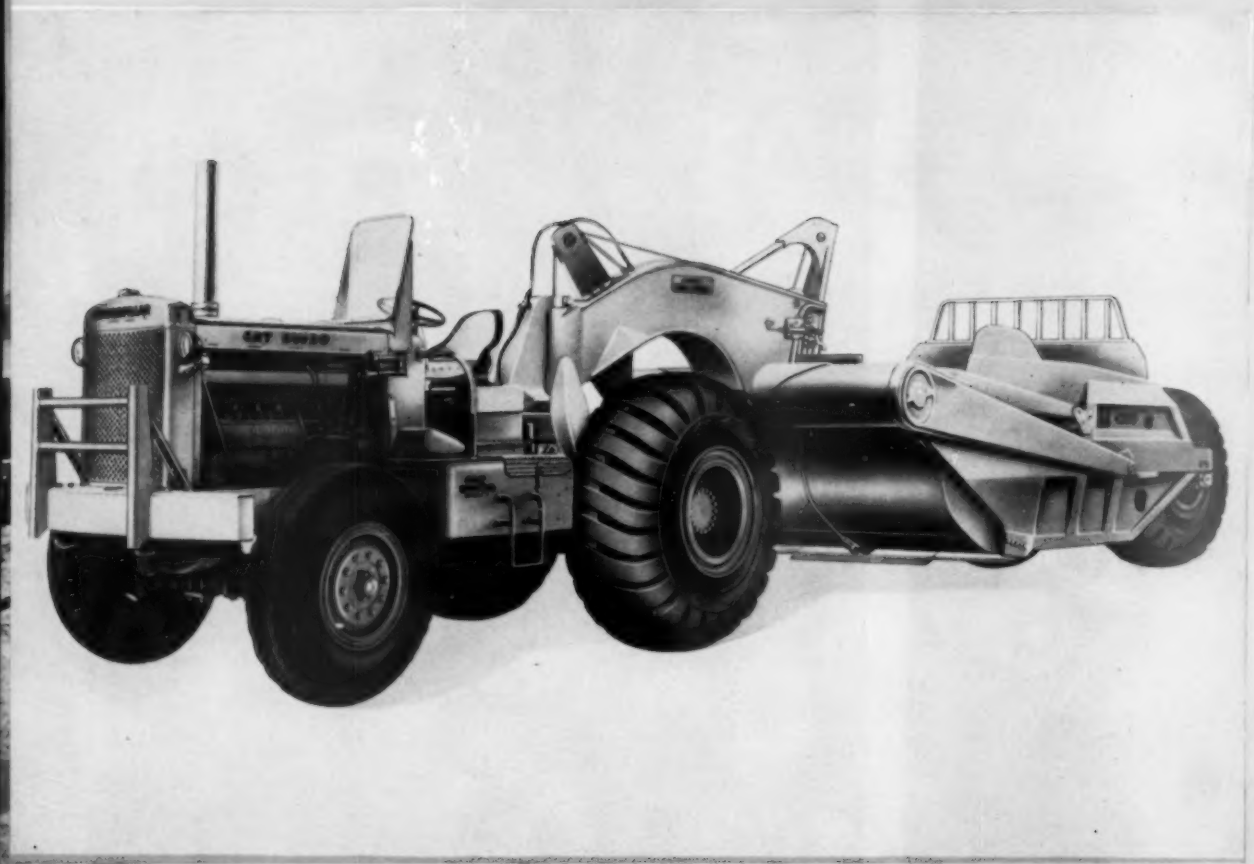
IF YOU NOW HAVE TRACK OR IF YOU ARE CONSIDERING A NEW PLANT SITE, ASK FOR A FREE SURVEY THAT WILL SHOW HOW YOU COULD SAVE WITH A GENERAL ELECTRIC LOCOMOTIVE. For a free survey now of your haulage needs, call your nearest General Electric Apparatus Sales Office. It's listed in the white pages of your telephone directory. General Electric Co., Locomotive & Car Equipment Dept., Erie, Pa. 120-100

Progress Is Our Most Important Product

GENERAL ELECTRIC

HERE THEY ARE!

DW20 and DW21 WITH



DW20
(SERIES F)

New HP—320 (maximum output)!
New Torque—28% torque rise!
New Speeds—up to 35.8 MPH!

Powered with a brand-new SUPER-TURBO Engine, these big Caterpillar rigs are faster, more powerful than ever. Horsepower of both the DW20 and DW21 is increased to 320. At equal rimpulls, speeds are 10% greater, and torque rise is more than double compared to the previous models. Now you can move earth faster and easier—and still have the dependability for which Cat equipment is famous.

Behind the new performance of the new DW20 (Series F) and DW21 (Series D) is their new SUPER-TURBO Engine. This amazing power plant incorporates a new concept in diesel engine turbocharging. Its heart is a revolutionary air induction system, unique in earthmoving machines . . . and another Caterpillar first.

This system allows use of more of the Turbocharger's potential than was possible before. Results: twice as much torque rise, higher horsepower, better acceleration and gradeability.

But more important, these results translate into faster cycles, greater production and more profit—*for you.*

NEW INCREASED HORSEPOWER

DW21
(SERIES D)

New HP—320 (maximum output)!
New Torque—28% torque rise!
New Speeds—up to 22.6 MPH!

Add to these DW20 and DW21 power advantages all the design features of Caterpillar LOWBOWL Scrapers. These matched units are built to use the greatest possible loading potential of the new power in the tractors.

Higher horsepower! New torque rise! Faster working speeds! Your production will hit new highs and your costs will drop when you turn these improved rigs loose on your job.

Call your Caterpillar Dealer right now and set up a demonstration on a job of your choice. The sooner you see the powerful new DW20 and DW21 in action, the sooner you'll start getting bigger returns from *your* wheel spread.

Caterpillar Tractor Co., Peoria, Illinois, U. S. A.

CATERPILLAR

Caterpillar and Cat are Registered Trademarks of Caterpillar Tractor Co.

SUPER-TURBO ENGINE
—First in the Industry
—First in Performance

PEOPLE IN THE NEWS

(Continued from page 48)

Managing director

WILLIAM C. SLEE has been appointed managing director of the New Jersey Crushed Stone Association, Trenton, N.J. Mr. Slee has a broad knowledge in association and sales promotion work, having served as assistant engineer director of the American Road Builders' Association, field engineer for the Portland Cement Association, and most recently, chief engineer of the sales division of the Robinson Clay Product Co., Inc., Akron, Ohio.

ARBA special assistant

C. D. CURTISS, who retired recently as commissioner of the U. S. Bureau of Public Roads, Washington, D.C., has accepted the position of special assistant to the executive vice president, Maj. Gen. Louis W. Prentiss (USA-Ret.), of the American Road Builders' Association. Mr. Curtiss is widely known as an expert on highway finance and management and an authority on the Federal-aid highway program. He served with the Bureau of Public Roads for 38 years.

Robert Crown to head Empire State Building Corp.

ROBERT CROWN, vice president and a director of Material Service Corp., and the Marblehead Lime Co., Chicago, Ill., has been elected president of the Empire State Building Corp., New York, N.Y. He succeeds his father, Colonel Henry Crown, who remains as chairman of the board. Mr. Crown was born in Chicago, attended the University of Arizona, Tucson, Ariz., and was graduated from Northwestern University, Evanston, Ill., with a Bachelor of Arts degree.

Ash Grove superintendent

IRA E. BARBER, left, was appointed superintendent of the Chanute, Kan., plant of Ash Grove Lime & Portland Cement Co., Kansas City, Mo. He succeeds Kenneth W. Wright, right, who retired after 40 years of service. Richard E. Willis, plant engineer, replaces Mr. Barber as assistant superintendent at Chanute.

Mr. Barber became associated with Ash Grove as a draftsman in 1922 following graduation from the University of Kansas, Lawrence, Kan. He was appointed assistant superintendent in 1945.

Mr. Wright joined the company in 1917 as draftsman in the engineering department following attendance at the University of Kansas.

OBITUARIES

George F. Pettinos, Sr., president of George F. Pettinos, Inc., Philadelphia, Pa., died February 22 at his home in Merion, Pa. He was 95 years old and up to the time of his death had been active head of the company he formed in 1892 to supply the metal working industry with industrial sand and graphite products.

Born in San Francisco, Calif., Mr. Pettinos attended Dickinson College and graduated from Lehigh University as a mechanical engineer. He was employed by Bethlehem Iron Works (now Bethlehem Steel Corp.) as chief engineer for five years prior to forming his own company.

Mr. Pettinos was also president of the Bridgeton Sand Co., Cape May Sand and Gravel Co., Reading Sand Co., A. T. Harris Sand Co., and Pettinos New England, Inc., all of which are engaged in the production of industrial sand.

He was one of the charter members of the National Industrial Sand Association and one of the founders of the American Foundrymen's Society. He was a life member of the American Society of Mechanical Engineers, a member of the Franklin Institute, American Ceramic Society, Engineers Club of Philadelphia, Academy of Natural Sciences, Contemporary Club and Lehigh University Club.

Lester C. Smull, vice president of Riverside Cement Co., Los Angeles, Calif., died suddenly on January 16 while visiting at the Mission Inn in Riverside, Calif. He was 57 years old. Born in Yakima, Wash., Mr. Smull received his B.S. degree from the University of Washington, Seattle, Wash. He had been associated with Riverside Cement Co. for more than 35 years, starting at the Crestmore plant in 1922. He became a salesman in 1930, serving the Riverside, San Bernardino, Los Angeles and Pasadena areas. In 1943 Mr. Smull was named assistant to the general manager. He became assistant to the president in 1947 and one year later was named assistant general manager, subsequently becoming works manager. He had served as vice president and works manager since 1950.

Mr. Smull was a member of the American Society for Testing Materials, American Concrete Institute, and the General Technical Committee of the Portland Cement Association.

Arthur C. Braun, president and general manager of Edison Industries, Inc., Oak Creek, Wis., manufacturers of mineral wool insulation, died suddenly on January 20 while on a business trip to Minneapolis, Minn. He was 53 years of age. Mr. Braun joined Edison Industries in 1939 and had been president and general manager since 1941. He was chairman of the Rock Wool Blowing Committee of the National Mineral Wool Association.

Russell G. Bickle, superintendent of the Massillon Washed Gravel Co., Massillon, Ohio, died December 29. He was 68 years old and had been associated with the company for the past 30 years.

Gerald R. Miller, former superintendent of the Fairborn, Ohio, plant of Southwestern Portland Cement Co., Los Angeles, Calif., died January 17. He was 60 years of age.

John V. Ward, Sr., traffic manager of the Nugent Sand Co., Louisville, Ky., died January 22 at the age of 53.

Loren F. Johnson, owner and operator of the Johnson Sand and Gravel Co., Xenia, Ohio, died February 1. He was 43 years old.

END

Meet tough "Specs" at LOWEST COST!

Remove wood, ochre, chert, lignite, shale, coal, soft and porous stone, and non-plastic type clay from aggregates at the lowest initial and operating cost available, with the Meckum Sand & Gravel Jig.

The Meckum Jigs' high acceptability and performance is proven as the jigged aggregates meet increasingly rigid 'specs' with ease, enabling you to obtain new contracts and greater profits. With amazing simplicity and low cost of operation, Meckum Jigs produce premium quality concrete aggregates for only a few pennies per ton.

More Meckum Sand & Gravel Jigs have been installed, than any other method of removing deleterious materials from aggregate. Don't delay, be prepared. Find out how a Meckum Jig can benefit you.

ECKUM ENGINEERING, INC.

DAYTON ROAD, OTTAWA, ILLINOIS • 53 W. JACKSON BLVD., CHICAGO 4, ILLINOIS

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Moving 16,000 to 20,000 tons of

One of the biggest and most efficient stone-crushing plants on this continent is owned by The Highway Paving Company Limited of Montreal, which recently increased its capacity from over 400 tons per hour to over 1600 tons per hour.

Almost all of this operation is automatic. However, quadrupling production involved moving rock from quarry face to crusher in sufficient quantity to assure Highway Paving's booming operations of a continuous supply of crushed stone.

Seven Macks were given the job. Working under six-yard electric shovels, they shuttle from shovel to crusher, each making 10 trips an hour; the seven trucks average over 16,000 tons per day. The shovels really have to move to keep up with the hustling Macks, which are on the go 10 hours a day.

Highway Paving knows that its production of crushed stone is dependent on equipment that must maintain "the pace that kills", day after week after month, without crippling breakdowns. Their Macks

Mack being loaded by one of the six-yard electric shovels. The Macks take a brutal beating from the seven-ton impact of broken limestone dropped with each shovel pass . . . but come right back for more.

rock per 10 hour day with 7 trucks

have proved that they are worthy of this dependence. In fact, no other make of dump vehicle is used in this quarry.

Macks have everything it takes for dependable, profitable quarry, mine or construction hauling. Your nearest Mack representative will be glad to give you the names of Mack users in your area who are racking up new production records, with minimum down time and top economy. Mack Trucks, Inc., Plainfield, New Jersey. In Canada: Mack Trucks of Canada, Ltd.

MACK
first name for
TRUCKS

5511

Dumping rock into Highway Paving's huge crusher which is so located that trucks can dump into it from both sides. Number of loads emptied into crusher are counted electronically, and tonnage crushed is determined by belt weighing equipment.

HINTS AND HELPS

Profit-making ideas developed by operating men

Armored storage

AN IMAGINATIVE PRODUCER was able to get the spare parts from dismantled armored vessels at a substantial savings, he put them to use as storage rooms. Mounted on concrete pads, the armored turrets make ideal rooms for secure storage of accounting records, tools and supplies.

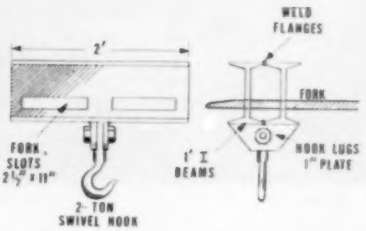
Make clear water

A WESTERN SAND PRODUCER found that the wells which supply plant water were inadequate to provide the huge volumes of water needed for his hydraulic monitors. It was an easy solution to dig a couple of large settling ponds to reclaim the used water, but it proved not so easy to get clear water from the ponds. In fact, the slimes settled so slowly that the water was returned to the plant almost as dirty as it had been, and pump impellers wore out prematurely.

The producer was introduced to a chemical on the market which solved his problem. A pure white powder, the chemical is readily dissolved in water to make a drip solution to be fed into the tailings water from the water scalper. The slimes settled rapidly and completely within the first few feet of the settling pond, leaving remarkably clear water in the rest of the pond to be pumped back to the plant.

Even though the chemical manufacturer recommended that the solution be fed to the tailings in three separate stages, the producer found that he got excellent results with only one stage feed. Actually, he found that there was no loss in efficiency if the slurry was over-dosed. The drip feeder could then be turned off while the effect of the chemical in the pond lasted for several days. The actual cost for producing clear water in the settling ponds was around 25 cents a day.

Fork lift hook



THERE ARE MANY OCCASIONS when the fork lift truck can render an extra service in the shop by lifting equipment which cannot be laid on a pallet. The fork can help in pulling engines from trucks, placing heavy work in a lathe, or changing lathe chucks.

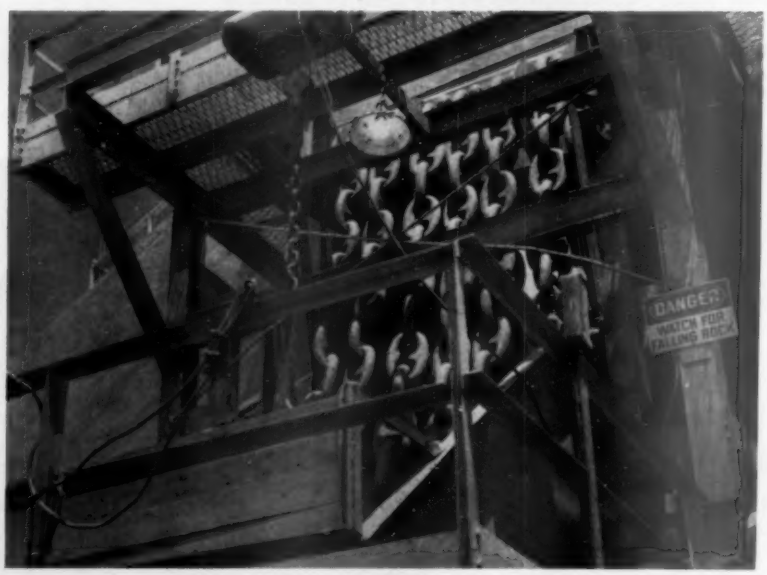
Here is a shop-made device readily assembled from 24 in. long I-beams with fork slots cut in the webs. The flanges are welded into a solid unit, giving four contact points for the forks. A 2-ton swivel hook is permanently suspended from a clevis.

When the rig is to be stored between jobs the operator merely drops it on the floor and backs off. The hook folds out of the way. When needed, the forks slide into the slots and the rig is on its way to do a lifting job. The capacity is about three tons.

The load is usually carried midway along the length of the forks to clear the truck. The guide slots are tilted slightly to prevent the bracket from sliding off the forks, while the swivel lets the load rotate.

Paul C. Ziemke
Clinton, Tenn.

Rotating curtain chains hold back large rock



AT A CEMENT PLANT IT WAS found that a single curtain of link chains did not quite do the job they wanted to prevent rock from surging the primary crusher. They installed six loops of chain suspended from a rotating drum. The loops give the necessary extra weight to hold back the large rock, while a slow rotation also helps to prevent too rapid loading of the crusher below the platform.

(Continued on page 60)

US RUBBER CONVEYOR BELTS

"They proved themselves in our first 10 plants, so we picked them for our 11th!"

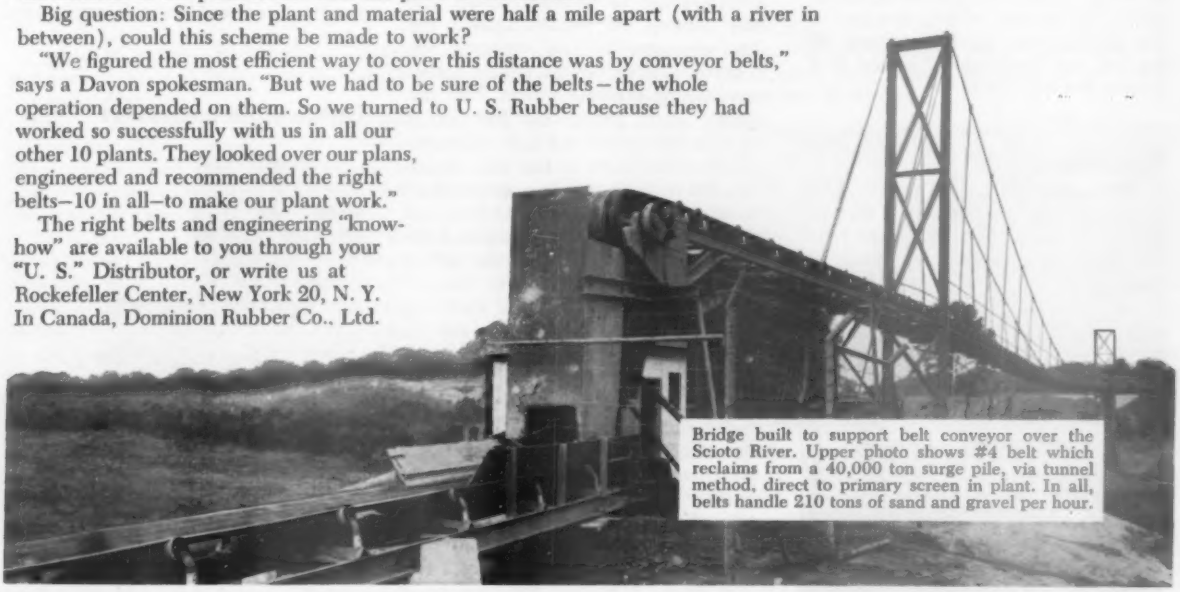
says director of sand and gravel company

When Davon, Inc., built its 11th plant recently, they decided it would be more economical to bring the material to the plant rather than the plant to the material.

Big question: Since the plant and material were half a mile apart (with a river in between), could this scheme be made to work?

"We figured the most efficient way to cover this distance was by conveyor belts," says a Davon spokesman. "But we had to be sure of the belts—the whole operation depended on them. So we turned to U. S. Rubber because they had worked so successfully with us in all our other 10 plants. They looked over our plans, engineered and recommended the right belts—10 in all—to make our plant work."

The right belts and engineering "know-how" are available to you through your "U. S." Distributor, or write us at Rockefeller Center, New York 20, N. Y. In Canada, Dominion Rubber Co., Ltd.



Bridge built to support belt conveyor over the Scioto River. Upper photo shows #4 belt which reclaims from a 40,000 ton surge pile, via tunnel method, direct to primary screen in plant. In all, belts handle 210 tons of sand and gravel per hour.

US RUBBER **Mechanical Goods Division**

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HINTS AND HELPS

(Continued from page 58)

Belt wiper

FEW BELT SCRAPERS or belt wipers work equally well on all materials at all times, giving the plant engineer plenty of opportunity to use his ingenuity. Here is how one man solved the problem of getting wet crushed sand off a belt conveyor.

Several strips of high carbon steel were forged into a "buggy spring" shape and mounted on the skirt boards of the conveyor below. The photo shows how the bars are arranged to maintain a uniform pressure against the face of the belt without gouging it. The damp, sticky sand is stripped off the belt and thoroughly tumbled as it falls to the belt below.

Clay separator

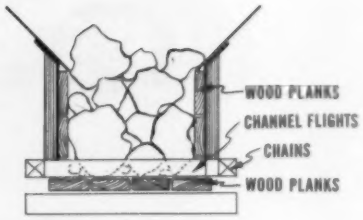
A WESTERN SAND AND GRAVEL producer has a problem of clay in the raw feed that reaches serious proportions. The clay balls come from lenses of black gumbo in the aggregates deposit which are brought up in a bucket on a dragline. The raw material is dropped to a vibrating screen to scalp off the largest lumps of clay which fall to an H-116 drag chain conveyor.

The 8-in. pitch links carry off the large lumps, letting any gravel which adheres, and smaller lumps to fall through the chain to a picking table below. In this way the wide chain drag conveyor acts as a moving grizzly.

With the larger lumps removed and most of the smaller lumps picked out, high-pressure sprays easily break up the rest of the clay and strip off the clay coating of the gravel.

Cobble scalper

THIS TOOTHED ROLL FLIPS large cobbles off the inclined belt conveyor at a midwestern sand and gravel producer's plant to provide riprap and dike armour. It rotates against the flow of material and removes the heavy boulders from the system before they hit the scalping screen. Flat roll impact idlers flatten the belt under the roll and spread the bed of material across the width of the belt. In this way the toothed roll does not need to be adjusted for the troughed belt, and can be raised or lowered to select the cobble size to be rolled off the belt to the storage area below.



Wood is useful

WHILE WOOD HAS PASSED out of the picture in most parts of the country as a structural material in industry, it still has many valuable and significant uses in the rock products industries.

Many heavy-duty feeders for blasted rock are fitted with heavy plate and structural members to contain the heavy rock. However, steel parts seem to fail prematurely when their structural strength is of little help against impact and low-velocity abrasive wear.

A number of the newer installations around the country are now taking advantage of what a number of ingenious maintenance men have discovered — lining hoppers and feeder chutes with wood planks increases the life of these liners.

One rock plant lined only the bottom and sides of a flight feeder with rough 2x12-in. planks. These planks cushioned the impact of the 24-in. cubes which were fed into a crusher below. The maintenance foreman believed that the wood would last much longer than steel plate and would be much easier and quicker to replace when worn.

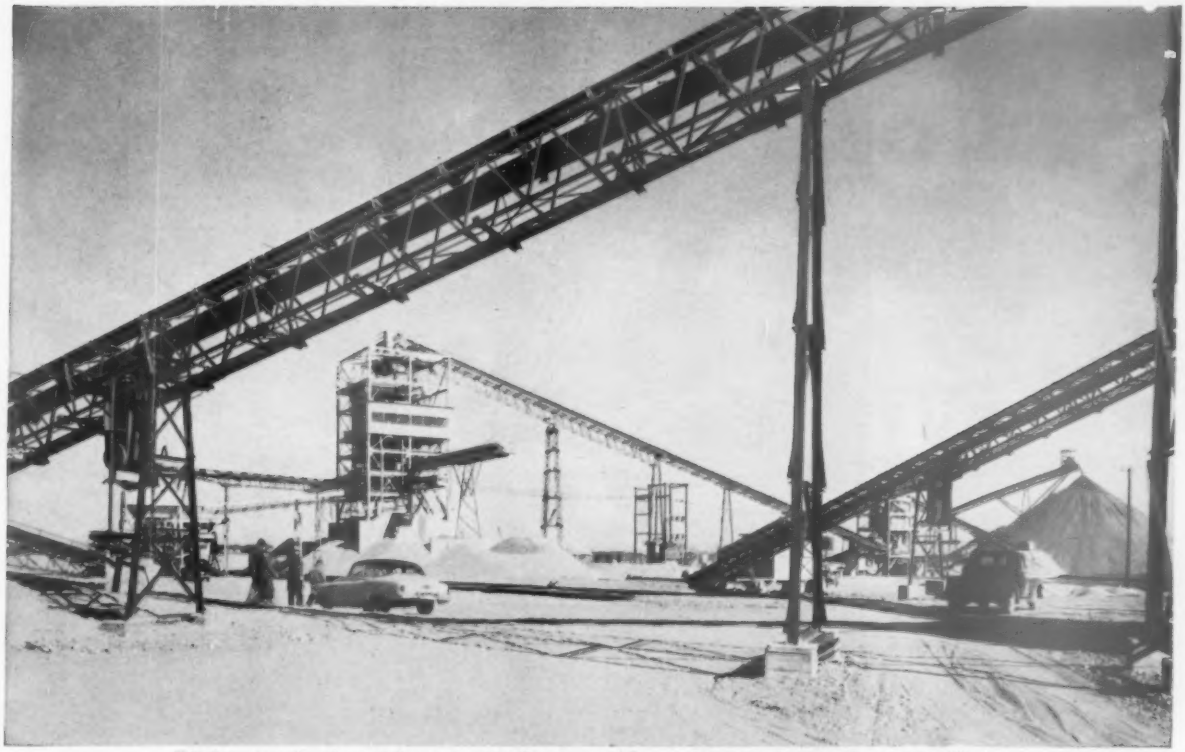
Lightweight enclosures

STURDY, LIGHTWEIGHT houses are readily erected over crushers and over conveyor discharges. They have the advantages of protecting the machinery of this midwestern producer and of confining any dust which might be generated around crushers, and conveyor loading and discharge points.

END

Suction pipe care is a simple matter

SOME OF THE simplest operations, like this suction pipe pumping out a pit, often cause difficulties out of proportion to their importance. The intake of this pumping line would dig itself a hole in the bottom, and soon would be pumping nothing but a rich clay slurry. However, the foreman of this southern cementmaker soon found an empty 50-gal. oil drum and lashed it to the end of the pipe. There is now enough buoyancy to keep the end of the pipe out of the mud. It makes the job of moving the pipe much simpler since the end is not stuck in the mud.



This shows a portion of one of the year's outstanding conveyor jobs . . . Consumer's Company, Crystal Lake, Illinois.

It's not true that Barber-Greene invented the belt conveyor

. . . but it is true that Barber-Greene introduced the greatest advance in belt conveyors since their invention —*standardization.*

Before Barber-Greene entered the field in 1916, belt conveyors were economical on paper—costly to build. Most installations were tailor-made, involving slow single-unit production . . . expensive field engineering . . . complicated assembly.

Then Barber-Greene developed a unique system of standardized conveyor components that quickly outdated ordinary methods of erection, operation and maintenance. Soon standardized conveyors were known for:

Faster delivery. Packaged units come from dealer stock or are immediately available from the factory.

Low-cost erection. Conveyors get into operation sooner with big savings in engineering costs.

Unmatched flexibility. Interchangeable parts simplify lengthening or shortening of conveyors to meet changing needs.

Today, standardized components are practical for installations of nearly every length, width and capacity. Wherever used, they give a new meaning to conveyor economy, utility and flexibility.

Drives, take-ups and similar units are completely assembled, aligned and adjusted by experts at the factory to assure trouble-free operation.

Write for literature or contact our conveyor division for details on your conveyor problem.

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Rock Products
Vol. 61, No. 4
April, 1958

The rewards of land rehabilitation—

- *creates community good will*
- *helps prevent possible zoning restrictions*

By HUBERT C. PERSONS

LAND REHABILITATION — one of industry's best weapons against zoning restrictions—is being handled on a grand scale by one of the country's largest sand and gravel producers, American Aggregates Corp. For the past 28 years the firm has been using land rehabilitation at all of its operations in the Middle West. The results, according to William E. Hole, president of the corporation, have been "richly rewarding in every sense of the word" and have been as important to their operation as mining, screening and washing are to other producers in the field.

American Aggregates is a huge operation with 17 plants in Ohio, Indiana and Michigan which process nearly 13 million tons of aggregate. Every one of the 17 plants in this far-flung operation practices land rehabilitation and reaps the benefit in public relations.

Mr. Hole explained that it is the company's policy to formulate a complete plan showing in detail the condition of the land after mining operations have been completed before a single foot of earth is removed for a new operation. In each instance such a plan must show ultimate location and extent of lakes, how slopes will be graded and where trees and shrubbery will be planted. The stripping and pit operations must then be coordinated with the reclamation plan.

Wayne Lakes park at Fort Jefferson, Ohio. This view shows the older part of the park after trees have grown up and residences have been built

E. D. Coppock, chairman of the board, American Aggregates Corp., estimates that his company's rate of production is using up about 250 acres of land each year. He points to this fact as indicative of the size of the land reclamation problem.

American Aggregates began land rehabilitation work 28 years ago, before zoning regulations were generally recognized as a threat to the sand and gravel business. This was at Fort Jefferson, Ohio, eight miles south of Greenville, at a location now known as Wayne Lakes Park, where the company first established a pit half a century ago. After the aggregates were taken, the spoil banks were bulldozed to a pleasing contour, grass and several thousand trees were planted and the water shore line was shaped to a gradual slope. After this preliminary reclamation work was done, a fishing club was formed and building lots leased. Cottages were built. Finally the cottage owners got together to form a corporation and bought the area from American Aggregates. Now, there are 166 homes built in this park—many of them permanent.

In the same general vicinity as Wayne Lakes Park the company has developed a recreation area known as Hills of Judea, on land which was a part of the Fort Jefferson gravel operation. Here there is a clubhouse, several lakes stocked with fish, a bathing beach and a fish hatchery.

Here are specific results of American Aggregates' rehabilitation program which has produced delightful residential developments, parks and recreational areas:

Bulldozers and draglines have transformed much of the land around the Urbana, Ohio, plant into an attractive park area. Three lakes, each covering about 50 acres, have been stocked with bass, trout and bluegills. Banks have been graded and seeded, hundreds of trees planted and, in addition to the three lakes, a half-mile-long trout stream has been created.

At the South Columbus, Ohio, plant, in the Scioto Valley, excavation below the water line is cre-

Reclaimed areas in Urbana, Ohio, after seeding and after trees have begun to grow

Land rehabilitation

continued . . .

ating 800 acres of lake area filled with exceptionally pure percolating underground water to an average depth of 30 ft. A clubhouse has been built and is being operated by the Scioto Lakes Fishing Club.

At the Grandview plant in North Columbus, Ohio, excavation below water level has created a 60-acre lake. An area bordering two highways has been leveled off and lots are being sold for commercial and business buildings. No manufacturing plants are to be located in the area. Backfilling was done with strippings and surplus sand.

At Green Oak, Michigan, a short distance west of Detroit, 16 and 20-in. suction dredges and a 10-cu. yd. dragline are taking out gravel to a depth of 60-ft. below the water line. Stripping is being handled to conform to the plan for future reclamation. Surplus material is being deposited at the shoreline and bulldozers are shaping it to an easy grade. The area adjoins Kensington Park operated by the Michigan Conservation Department which will, in addition, operate the newly created lake.

At Oxford, Michigan, in a 300-acre tract of land formerly owned by the Ward Sand & Gravel Co., American Aggregates is forming a 150-acre body of water. This is known as Crescent Lake and is to be a part of a residential development. The shore of this lake, originally steep and eroded, has been graded to a gradual slope and seeded to grass. Rehabilitation plans call for planting of several thousand trees. Streets have already been laid out.

In cooperation with city officials, an area known as Raymond Park Industrial District has been reclaimed from a gravel pit at South Indianapolis, Ind. Gravel had been removed to a depth of 80 ft. Waste sand was pumped in by hydraulic dredge and top soil added at the final grade. The entire area has been seeded to alfalfa. This land is being subdivided and sold for industrial sites.

At the North Indianapolis plant, 16-in. dredges are removing gravel down to 50-ft. below water level. The land bordering the lake which this operation is creating is being carefully graded and will be planted and landscaped as a future residential development.

Overall view of a recently worked over gravel area in Fort Jefferson, Ohio

Reclamation of worked-out pits is becoming increasingly important each year, in the opinion of the officers of American Aggregates Corporation. Both board chairman Coppock and President Hole have repeatedly emphasized the fact that land rehabilitation is an industry-wide problem, not the responsibility of a few. "Unless the whole industry can demonstrate to the public and to zoning officials that sand and gravel operations will not result in a permanent blight on the landscape," Mr. Hole says, "we can expect harsh legislation and adverse zoning which may deny us some of our most vital properties."

Mr. Hole points out that although acquisition of gravel lands at a rate greater than the annual depletion is important to all in the industry, such acquisition is becoming increasingly difficult.

"Urban encroachment into rural areas makes impossible the exploitation of deposits near large consuming markets," Mr. Hole says. "The extension of rural zoning, much of it ill-conceived, is more and more becoming a serious threat to the life of the sand and gravel industry."

In addition to Board Chairman Coppock and President Hole, principal executives of the Corporation are: L. E. Blanchard, vice president of operations; J. C. Patty, vice president for procurement; C. E. Glander, vice president for sales; M. G. Kerr, vice president in charge of the Michigan district; Walter I. Thieme, vice president in charge of Indiana district; William E. Hole, Jr., vice president in charge of the Ohio district, and William C. Rhodes, secretary-treasurer.

END

Flintkote builds modern plant in fight for piece of gypsum market

Texas plant features ultimate in dust collection, automatic control of kettles, speed control of board machine

By ELWOOD MESCHTER

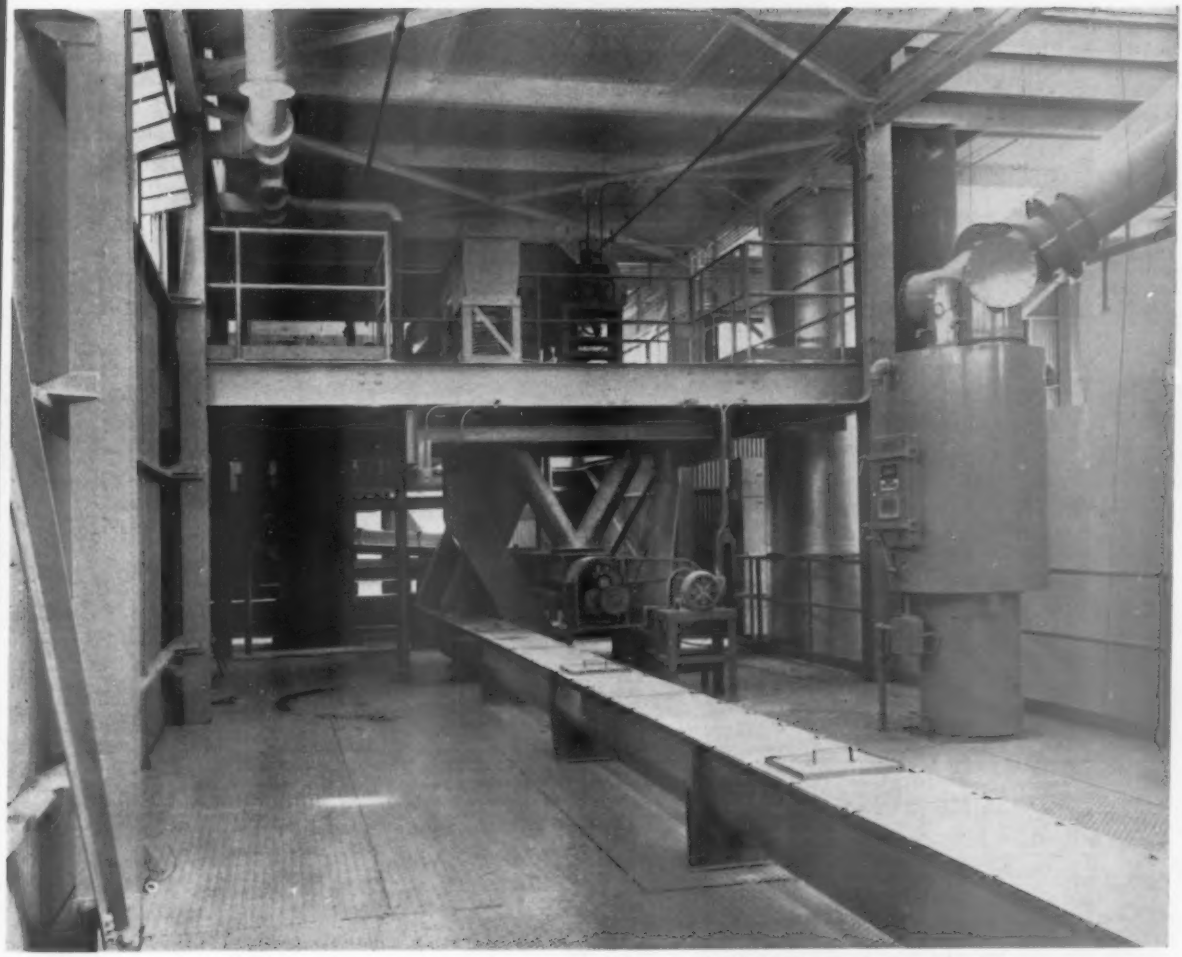
WITHIN THE SHORT SPAN of a year, The Flintkote Company has burst into the tight, competitive gypsum products field with almost explosive impact. This is part of a huge expansion and diversification program that has made the company one of the really big producers in the rock products industry.

Flintkote entered the gypsum business with the construction of an ultra-modern, high-efficiency wallboard and plaster plant on the high, windswept plains of west Texas. This multi-million dollar plant at Sweetwater is right on top of several generations' supply of high-grade gypsum rock. It is the fruition of one of the company's basic economic policies of starting new projects only after careful studies have shown that dependable supplies of raw materials can be secured and that production and distribution costs can be made as low as competitors'.

Though the new plant was built at a time when the market for its products was at a low ebb, the management fully expects home construction to be booming again before the plant reaches top capacity and efficiency. It is moving aggressively to carve out a portion of this market and to become as well established as it is in other parts of the building supplies business. Said Perce C. Rowe, Flintkote president—"We are preparing vigorously for the dynamic demand that will result from sharply accelerated family formations to come in the 1960's."

The company has prepared itself with characteristic energy and foresight for the emergence of this market by integrating several major producers in the rock products industry into its organization. During 1956 it acquired Insulrock Company, a fiber reinforced concrete slab manufacturer; The Van-Packer Company, a prefabricated stack and chimney maker; and United States Lime Products Corporation, a major western lime producer. Flintkote took in Kosmos Portland Cement Co. as a subsidiary in 1957 to round out its diversification program.

In contrast to the obscurancy of many established producers in the gypsum business, the new plant was opened with a country-wide publicity and open house on September 19, 1957. This is a part of an effort to become as well known as a major producer in the gypsum products field as it is in the roofing and siding business.



Here, inside Flintkote's new plant, a distributing conveyor, foreground, carries finished stucco. At the right is the element of the electrostatic dust collector

An essential part of this program is to be a "good neighbor" in Sweetwater, now largely a residential area. Even though the plant on its 400-acre plot is in almost barren country, Flintkote is anticipating an influx of industrial neighbors. A highly efficient electrostatic dust precipitator was installed and mechanical dust collectors at every part of the process make the plant as dust-free as if it were in a metropolitan area. Flintkote considers the extra costs as a good investment.

The manufacture of high-quality gypsum products starts with careful preparation of rock in the quarry. The bed of Permian gypsum is about 50 ft. thick in four seams which will be worked in benches. The thin layer of red Texas soil is removed to spoil piles and the covering over each seam cleaned and scraped before drilling and blasting. Two-in. holes will be drilled on about 8-ft. centers and shot with dynamite to avoid the production of slabs too large for the primary crusher. Shot rock is loaded out into a fleet of trucks to be hauled to the heavy duty feeder over the primary crusher.

The 36 x 40-in. single roll primary crusher is fed with a heavy billet feeder about 4 ft. wide and 10-ft. centers. Each flight is a 4-in. square steel bar secured to rivetless type bar link chains. As large lumps are pulled slowly out of the bottom of the wood-lined steel hopper they are tilted to drop into the nip of the single roll crusher. Minus 30-in. quarry feed rock is reduced to minus 4-in. cubes and dropped to a belt conveyor below the crusher.

Thirty inch wide inclined belt conveyors take the crushed rock from the primary crusher into the plant, over a continuous recording and weighing scale in the transfer house and under an electromagnet to remove any magnetic scrap from the

These processing kettles are fed with twin tubular screw feeders

Flintkote gypsum plant

continued . . .

stream of rock passing over a head pulley. In the plant a short belt conveyor distributes the rock to one of two large steel storage tanks.

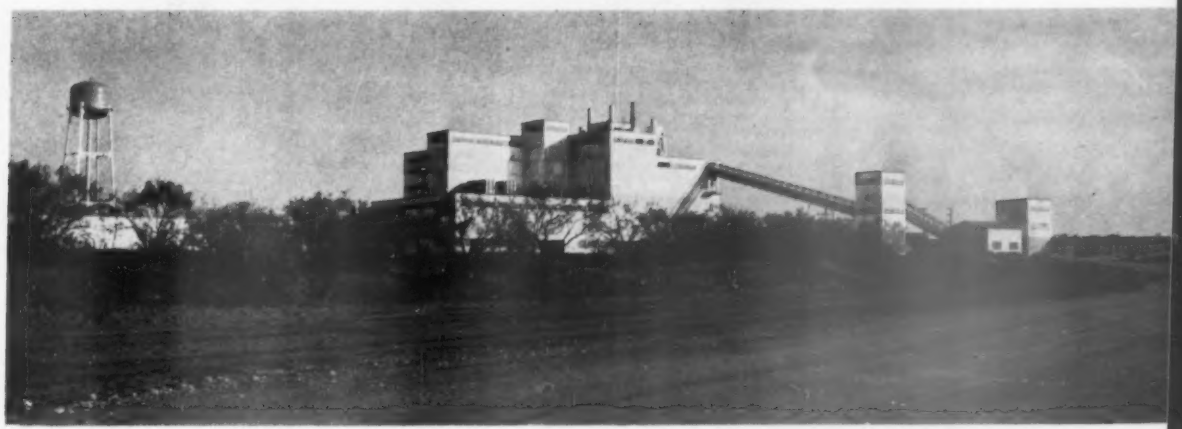
Flintkote processes the raw gypsum very efficiently to reduce it to the size required in the kettles. The large stone is drawn from the conical bottom of the raw storage tanks with enclosed apron feeders. Each feeder discharges to a 36 x 24-in. hammermill directly below, which reduces it to about minus ¾ in. This product is elevated to surge bins above roller mills which will make the final reduction before calcining.

There are two high-side roller mills with integral single whizzer air separators and flash drying. The system is complete with automatic controls on the gas-fired furnaces to reduce the moisture from an initial four percent to bone dry without overheating. The separator takes out only the 100-mesh product and drops oversize back into the roller mill. Still quite warm, the acceptable material is conveyed from the bottom of either one of the two separators to any one of the three storage tanks ahead of the kettles which will remove the combined water.

This is done with an "over and under" screw conveyor system. The upper conveyor receives finished material from either or both separators, carries it the width of the building and discharges to the second conveyor just below. This conveyor returns the width of the building and discharges to one of the three tanks through one of six discharge openings. The conveyors, conveyor transfer and discharge gates are all dust tight and vapor tight, completely eliminating dust from this part of the operation.

Much of the effectiveness of the kettles, which take out most of the water of crystallization from the raw gypsum, depends upon the uniform fineness of the raw gypsum. Any particles which are larger than about 100 mesh may not completely dehydrate—this is a real production hazard since raw gypsum is a powerful accelerator for hardening or rehydrating the calcined gypsum. In fact, a carefully measured amount of raw gypsum is added to the mix on the board line later in the process to provide control of the rate of hardening of the wet board.

The three gas-fired kettles which convert the raw gypsum to plaster are equipped with specially designed automatic instruments for close control



Flintkote's gleaming new plant

of the reduction process. Each kettle is equipped with conveyors for rapid loading and with quick-acting gates for fast discharge of each batch of material.

Kettles are probably the only process machine unique to the gypsum industry. Simply, they are huge steel tanks suspended in a vertical refractory lined furnace with heat applied to the bottom. Twin screw conveyors in a tubular housing pull a batch of fine material from a surge tank and discharge into the tank through rotary vane feeders, which act as vapor locks during the "boiling." Each tank is stirred, or agitated with a steel vane vertical mixer.

The charge of finished plaster is discharged from the kettle into a hot pit—a double-walled insulated steel box which acts as a surge hopper for the hot material while it is being conveyed to storage.

Each hot pit is equipped with four screw feeders which are spaced across the bottom of the box. Every group of feeders can discharge to one of two long lines of screw conveyors which collect the material and start it on its way to storage. Each screw feeder is in a tubular housing, and each feeder can be operated individually. Butterfly valves in the housing permit the feeders to discharge into either one of the collecting screws.

The hot, finished material can be sent to storage tanks in the plaster bagging building, to storage in the wallboard building or back to one of the kettles. A complex arrangement of elevators and screw conveyors can take the finished stucco to a vibrating screen, to a tube mill, recycle it back to another tank, or take it to an air classifier. The 10 ft. diam. double whizzer air classifier will separate stucco in the minus 325-mesh range. It will be sacked, or used to make Keene's cement, gauging plaster and a full line of specialty and high specification plasters.

The pure white gypsum is dug from the top of the 50 ft. thick deposit

Dust and vapor from the kettles and hot pits is exhausted to the atmosphere through an electrostatic dust collector. This high-efficiency collector takes out virtually all of the suspended fine material, which is sent back to the process. In contrast to the majority of gypsum plants across the country, the stack plume from this new plant is scarcely noticeable. Effective dust collection will pay out for Flintkote in improved safety and efficiency; it is expected that the cost of material saved will pay for the installation of dust collectors within a short time.

Gypsum which is to be milled for finish plaster or stucco is fed from storage with a drag chain conveyor to an 8 x 20-ft. tube mill. Milled plaster is

The main artery of the plant is this gypsum board forming machine. The board dryer is in the background

Flintkote gypsum plant

continued . . .

stored above one of the bagging machines and bagged after the addition of plasticizers, retarders or other additives. Each one of the four storage tanks in the bagging plant is fitted with screw feeders discharging to surge hoppers over the bagging machines. Additives are put into the dry mix with rotary valve feeders or small screw feeders.

Finished stucco for the wallboard plant is taken to storage in a screw conveyor system and stored in one of two deep tanks which hold the supply for the board-making machines. These tanks and the conveying systems are all vented to dust collectors which drop out the dust and return it to the tanks.

Each one of the storage tanks has a bifurcated bottom fitted with gates above drag chain feeders. The feeders discharge to collecting and mixing screws where various additives, including potassium sulphate and starch, are thoroughly blended before they are dropped to the mixer above the board machine.

The mixer makes a slurry of the dry ingredients and other additives—ground block, a gypsum accelerator to harden the board rapidly; corn starch to help the slurry adhere to the paper covers of the wallboard; rosin foam and paper fiber. The mixer travels at high speed to mix these ingredients rapidly and completely and they are discharged to the traveling surface of a sheet of paper through three spreader nozzles. A covering sheet of paper is pressed on the wet mixture as it passes under forming rolls and between edge formers. Wall board is normally ½ in. thick and 48 in. wide and can be formed at lineal speeds ranging from 50 to 150 fpm.

The first two sections of the wallboard forming machine are about 250 ft. long, where the soft, newly formed board is supported on a ½ in. thick, 57 in. wide white rubber belt. The endless length of wallboard then travels to a 100-ft. section of closely spaced live roll conveyor. Stiff but still plastic, the board is cut to an exact length under a rotary knife. The speed of the knife is synchronized to the speed of the board just ahead of the knife so that exact lengths of board are cut within plus or minus 1/32 in. for any length of board between

4 and 16 ft. and at any speed between the slow 50 fpm. and the maximum 150 fpm.

The materials saved by this exact control will more than pay the added expenses of the control devices, for the material from even a fraction of an inch on a board may amount to tons of raw material in a year. The control system permits the knife to resume cutting precise lengths immediately after any break in the board line ahead of the knife—again conserving materials.

The selection of controls to achieve exact tolerances of board lengths was a difficult engineering design problem which was resolved by the close cooperation of the design engineers, the board machine manufacturer and controls specialists. Together they came up with a system which yielded the dimensional quality and simplicity of operation demanded by Flintkote.

Briefly, the knife control system consists of a measuring wheel which rolls along the surface of the board just ahead of the knife to drive a line speed selsyn which generates a voltage proportional to its rotor position. The rotating knife drives another selsyn which puts out a similar signal, and both are compared by a magnetic amplifier. The position of the knife is then adjusted to compensate for slight changes in the actual speed of the board ahead of the knife due to differential shrinkages in the board, drag of the conveyor parts or to slight variations in the characteristics of the electric current to the motors driving the belt conveyor or the live roll conveyor.

However, if this knife correction were taking place while the knife was in contact with the board it might tear the soft board. Another control circuit was introduced to let the line speed selsyn change the position of the knife for the next cut only when it was at rest. A selsyn in the speed circuit, an adjustable variable speed transmission, a single turn clutch, a small dc. motor and a knife-actuated limit switch permit the needed adjustment to be made while the knife is stopped, while the manual corrections can be made to the system at any time. The transmission can be set to make either longer or shorter board with great accuracy, and the control system holds the exact board length continuously.

The speed of the oven conveyors is synchronized with the speed of the board-forming belt conveyor in a similar way to assure that board production does not overtake drying, or that drying does not get ahead of wet board production.

After each wet board has been cut to an exact length, an accelerating section pulls it rapidly away from the knife section and takes it to a wet board transfer where it is inspected and inverted before it is sent into the drying oven. Any board

Please turn to page 122

MAJOR EQUIPMENT USED AT FLINTKOTE CO., SWEETWATER, TEXAS

Shovel, 1½ cu. yd.	P & H, Harnischfeger Co.
Trucks (2)	International Harvester
Crusher, primary roll	Pennsylvania Crusher Div.
Motors	Allis-Chalmers Mfg. Co.
Reducers, Steelflex	Falk Corp.
Reducers, torque-arm	Dodge Mfg. Co.
Conveyor assemblies	Wright & Shipley
Conveyor idlers	Hewitt-Robins
Conveyor belts	Hewitt-Robins
Belt scale	Trans-Weigh Co.
Electromagnet	Ohio Electric Co.
Hammermill, type B (2)	Jeffrey Mfg. Co.
Apron feeders (2)	Continental Gin Co.
Roller mill, No. 6058 (2)	Raymond Div.
Screw conveyors	Thomas-Conveyor
Bucket elevators	Thomas-Conveyor
Vibrating screen (2) Rotex	Simpson, Orville Co.
Kettles and hot pits (3)	J. B. Ehrsam & Sons Mfg. Co.
Tube mill	Traylor Engineering & Mfg. Co.
Packers (4)	St. Regis Paper Co.
Electrostatic precipitator	Research-Cottrell
Gypsum board forming machine	J. B. Ehrsam & Sons Mfg. Co.
Board drying machine	Coe Manufacturing Co.
Board machine controls	Square D Co. and Century Electric Co.
Dust filters	The Day Co.
Lift trucks (2) Utilitruc	Clark Equipment Co.
Engineers, architects and construction managers	Johnson & Johnson
Building steel	Capitol Steel & Iron Co.
Building construction	Thos. S. Byrne, Inc.
Machinery installation	Jesse N. Aycock, Contractor, Inc.
Electrical installation	Harman Electrical Construction Co.

A recent photo of Mr. Pettinos

"In order to

By JOSEPH N. BELL

The philosophy of George Pettinos

—industrial sand pioneer

The editors of Rock Products regret to report that Mr. Pettinos died about five weeks ago, just after this article had been prepared for publication. We're deeply sorry that this feature could not have been printed before his death.

ON FEBRUARY 22, 1958, Mr. George Pettinos—president of George F. Pettinos, Inc. and one of the real pioneers in the industrial sand business in the United States—died at the age of 95. Mr. Pettinos had been in failing health and confined to his home in suburban Philadelphia for some time; but the lessons he taught and the examples he set in almost a century of abundant living are certainly well worth sharing with other members of the industries which meant such a great deal to him.

Even today, most of George's visions are still ahead—and seldom behind. What did he see in the future for the industry which had been a part of his life for so long? He felt that the most numerous and rapid advancements will come in two areas:

—automation and mechanization which will eventually take the labor out of labor and make the workman a watchman and button-pusher. "And we'll keep on working," said George, "to reduce the number of buttons he has to push;"

—workmen's comfort, which sometimes is a little hard to come by in the sand business—hot in the summer and cold in the winter. George saw heated and walled plants, with good sanitation facilities throughout the industry. He felt strongly that improved working conditions will upgrade everything in the industry, including profits.

George Pettinos was one of the world's most enthusiastic and vocal disciples of the engineering profession. His primary interest was always in the technological end of the sand business. He contributed much to the classification of sands, the elimination of clay matter from silicas, and methods of precise control of classifiers. He had long felt that the professional engineer is one of the most important people in our society, and he had been preaching the need for more engineers for many years—long before the current well-publicized shortage.

"Any group that is consistently building employment and a better standard of living is good and desirable," he said, "and the engineering profession is constantly engaged in doing these things."

George Pettinos, Sr. was the 26th of a long line of Georges; the family originally came from Rio de Janeiro. George's parents migrated to San Francisco where George was born in 1862. His

succeed in business, a man must thoroughly enjoy it."

father was a rugged character who helped form the vigilantes in San Francisco. He died in his early 40's, and George's mother brought her two sons back to Carlisle, Pennsylvania to raise.

George's youthful inclinations were toward the clergy and he went to Dickinson College to study for the Methodist ministry. He was almost ready to be ordained when he decided being a minister was a little too cloistered a life for him, and he turned to engineering instead. He won a scholarship to Lehigh University and was graduated in 1887; he earned money to support himself in school by playing the violin which he did very well to the day he died.

George always held a great deal of affection for Lehigh. Because they gave him an education he badly wanted and needed, his gratitude in later years was unbounded. As soon as he began to prosper, he sent Lehigh a check for his four year's tuition—and since that time he had given a great deal of both money and attention to the school. He was instrumental in starting a new hospital, several dormitories and a cafeteria at Lehigh. These gifts corresponded with his conception of the needs of college men.

"They should be well slept, well fed and well cared for to be good students," he said many times.

George was a junior genius almost from the beginning of his working career. Hard and rugged, he stood about 6 ft. 1 in. and weighed about 180 pounds. He was a real novelty in that day and age —a college trained man in a field which boasted very few formally educated people. Only a few years out of college he became chief engineer of the Bethlehem Iron Company (now Bethlehem Steel), and during this period he designed and built Bethlehem's first open hearth furnace; he also developed forging hammers and a heat-treating department.

In 1892, George bought a graphite facing plant just outside of Bethlehem with his life savings of $1,548. After making a down payment on the plant, he had just $48 left for working capital. Five years later, his brother, Charles, joined him in the business—a partnership that continued until 1916 when the business was split between them and each went his own way.

The new business prospered, and George began looking about him for new worlds to conquer. His sights rested firmly on Philadelphia, and shortly after the turn of the century, he moved his business there. In Philadelphia, George quickly began to learn some of the hard facts of competitive life. He found he couldn't sell his graphite because of one large company which completely dominated the field. This company was the only industrial sand producer in the Philadelphia area and when its customers began looking to Pettinos for graphite, the sand producer said, in effect: "If you want sand, you'll have to buy your graphite from us, too."

The implications to George Pettinos were obvious. If he was to meet the competition, he'd have to get into the commercial sand business. And he did. Here, again, his engineering skill and knowledge came to the forefront. He applied the first principles of mechanization and automation to the sand business when he purchased derricks and put them to work in 1904. At that time about the only mechanization was in the heads of the horses who trundled back and forth carrying wagonloads of sand without a driver. About one ton of sand was produced per man hour in the early 1900's—as contrasted with about four today.

In addition to George's technical acumen, his public relations sense also helped him to get established firmly in Philadelphia. About the time George was striving for a foothold, the foundries in Philadelphia were in a killing price war. Anger had blinded them to the fact that they were committing business suicide. In this climate, George scraped together some cash and threw a huge banquet to which he invited all of the foundry owners in the Philadelphia area. With his audience sitting back full of good food and competitive malice, George laid it squarely on the line with them.

"Man should never have an idle mind. Always have

Philosophy of George Pettinos

continued . . .

"You," he told his startled audience, "are nothing but a bunch of damned fools for giving your castings away. Maybe you don't have to stay in business, but I do. And if you all go under, I won't have anybody to sell to."

The meeting awakened the foundrymen; it also established George solidly with his customers. From this Pettinos' banquet was born the Philadelphia Foundrymen's Association which later became the American Foundrymen's Society. George was one of the charter members—and rightfully so.

While all this was going on, George had bought a farm next door to the sand deposits of his competitor. Both were shipping by boat, but the competitor owned his own boats which gave him a price advantage. However, angry customers, sick of coercion, began buying from George. This, plus his technical advantages, enabled him to eat away at the sand business in Philadelphia. The fight was rugged for 12 years—until George was finally able to buy the boat line shortly before World War I.

In the meantime he was opening new plants at several localities in New Jersey. Once he acquired the boat line, George extended his business from Norfolk to Boston and began to specialize in sands for the fast growing steel companies. In 1923, Pettinos was one of the first industrial concerns in Philadelphia to buy a block of old homes near the center of the city and convert them to offices. Then it was a very rugged neighborhood; today, the Pettinos location is a fashionable, high rent district just off the main shopping center.

The growth of Pettinos, Inc. as producers of industrial sand has been strong and steady—with one exception—through the years. In the first decade of the twentieth century, production averaged between 50,000 and 100,000 tons yearly. This had doubled by 1920, and increased to 300,000 by 1930. During the depression years, production skidded back to about 50,000 tons a year. At this time, George had sizeable real estate holdings and could have retired comfortably. But instead he chose to pump his savings into the company to keep it alive. His confidence paid off handsomely. By 1940, production was back to almost 400,000 tons and it has since crept over the half-million mark. Pettinos, Inc. today has nine active plants employing between 150 and 250 men.

During the 20's, George invested heavily in real estate. One of his better deals was an island off the New Jersey coast in which he bought a half interest for $10,000. The property was subdivided and brought him an income of $50,000 a year for the first two years he owned it. The third year, a hurricane hit the area and washed away 150 of George's lots in its wake. As always, George didn't intend to profit from someone else's misfortune; he told all the unlucky property owners to select another lot from the subdivision without additional charge. Everyone accepted gratefully except two suspicious ladies from California who didn't intend to be flim-flammed into giving up their waterfront property by an eastern city slicker. After a great many querulous letters from them, George gave up. As far as he knew, they still owned a piece of property on the bottom of the Atlantic Ocean near his island.

On the surface, George's feelings about money had seemed contradictory. He had always been generous with money—sometimes to a marked degree; he had also never hesitated to plunge large sums of money into what looked like a highly speculative undertaking. Yet, at the same time he had been highly conscious of the value of a dollar, and cautious with his investments. This combination of qualities made him a rich man. He knew when to plunge and when to shy away; and his generosity was usually returned ten fold—not just in money but in good will and better business, too.

For example, he was always disturbed by the

something on the anvil."

tremendously high cost of insuring his old wooden plants. So in 1926, he began tearing them down, and in 1927 borrowed $500,000 to rebuild his plants of fire-resistant material. This debt was hanging heavy over his head when the depression hit; yet he paid it all back during the worst of the depression years. Today the Pettinos Company hasn't a single dollar of bonded debt.

George always ploughed his cash back into the business—which is one large reason for its steady growth. His yardstick for spending was to go ahead as long as the expenditure would eventually result in decreasing production costs—not just in dollars but in such indirect benefits as worker's comfort as well.

"We can't stand in the way of progress by pinching pennies," he used to say. "We'll always have a return on our investment. But just remember that you can't always measure a return only in dollars and cents."

George was a salty character, not averse to a sharp word, a pointed remark or a positive action. In spite of these things, he always got along well with his men. Some of his tiffs with company workmen are legend.

There was the day, long ago—for example—when he turned up unexpectedly at one of his plants. A startled laborer, seeing George approaching, began to shovel sand madly. The frenetic activity caught George's eye and he came over and stood wordlessly beside the man. For a half hour, George watched silently and the worker shoveled manfully. Finally he collapsed from exhaustion.

Triumphantly, George told him: "No man can keep up a pace like that, and you should at least give me credit for enough intelligence to know it. Now go sit down and rest. And pace yourself sensibly after this—whether the boss is around or not."

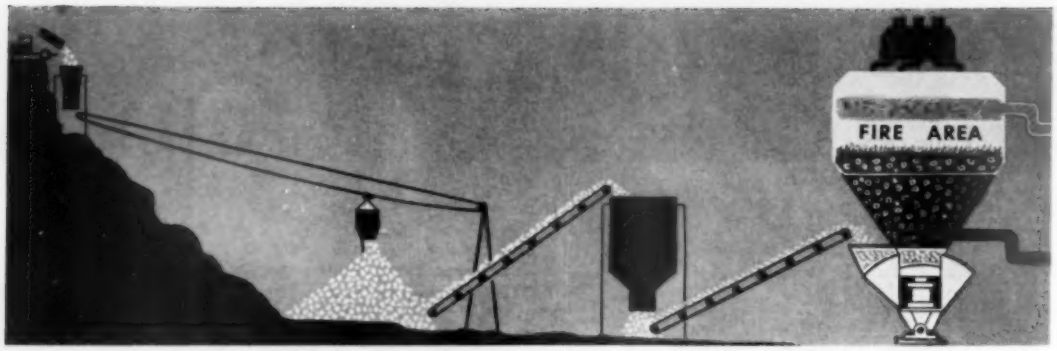
On another occasion, he showed up at one of his maintenance garages when things were slow.

George Pettinos as a young man

The mechanics on duty pulled in the nearest truck and began frantically to work on it. George watched impassively for a few minutes, then told them: "Don't make work for yourselves. It's cheaper for me when you're sitting around with nothing to do. Take care of the repairs when they need to be made; but don't pull equipment in here off productive work just to keep busy."

George's first name acquaintance with his men and his lifelong efforts to upgrade their income,

Please turn to page 118



Flow diagram. Shale is mined and crushed high on the mountain. It is then carried down by aerial tramway to another crusher and then to the retort

Western firm shows how it can be done commercially

Squeezing OIL from SHALE

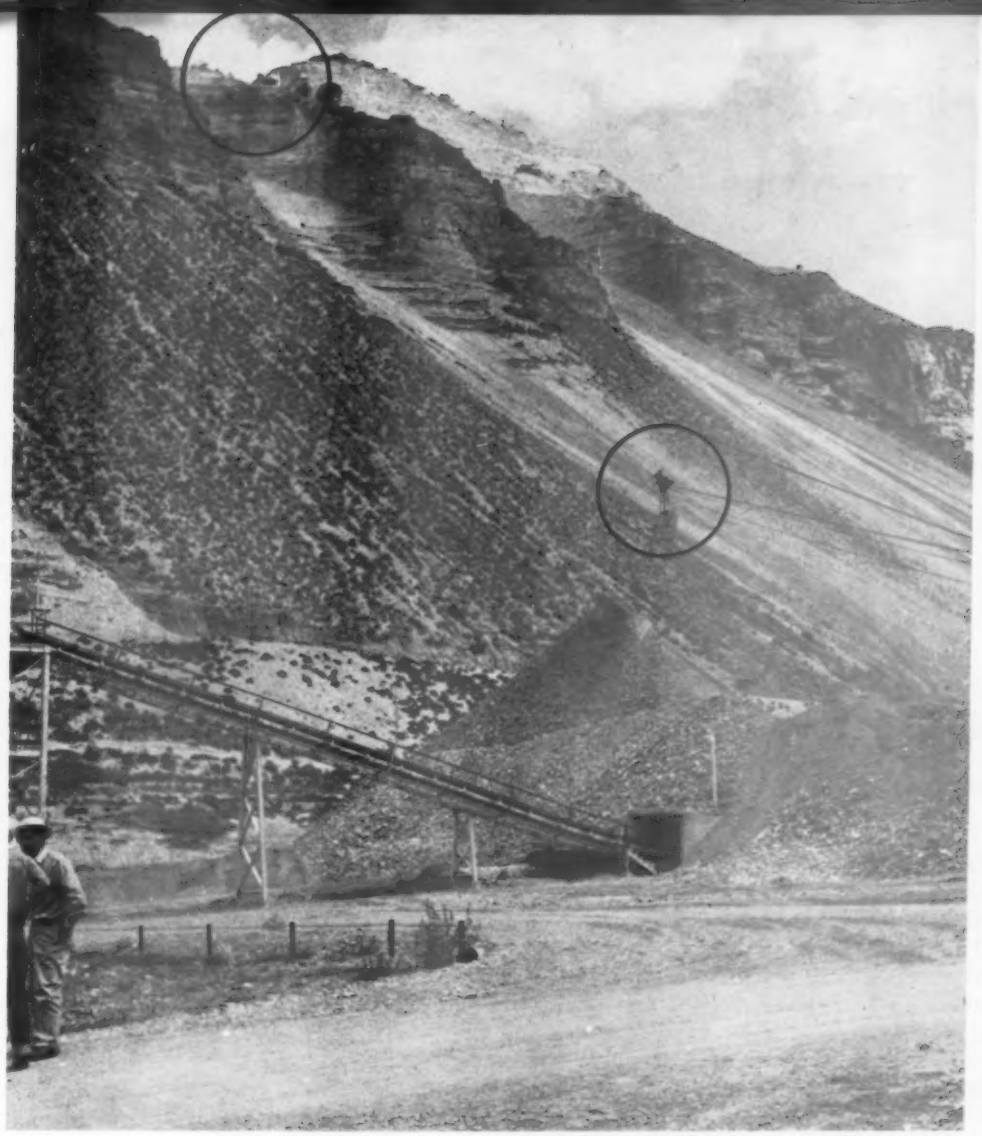
By WALTER B. LENHART

ONE TRILLION BARRELS of oil—10 times as much as the world has used since the dawn of time—are locked up in the Piceance Creek Basin in northwest Colorado, in the form of oil shale. Developing a practical commercial process for recovering it has been for years the goal of many farsighted groups who realized its economic and strategic importance in the face of ever-dwindling oil field reserves.

The goal is now within sight. On May 18, 1957, Union Oil Company of California dedicated its Shale Demonstration Plant near Grand Valley, Colorado. This facility is a full-scale research tool designed to permit intensive study of oil shale retorting. To date, the research program has involved an investment of over $8 million of private corporate funds, and has conclusively shown that shale oil can be extracted in commercial quantity from oil shale rock.

The Colorado shales contain from a few gallons up to 100 gallons per ton. The Mahogany Ledge (so called from its distinguishing color) averages about 30 gallons per ton of recoverable oil. The Piceance Creek Basin as a whole is in the range of 15 gallons per ton of recoverable oil. About half the Colorado oil shale deposits are owned by individuals and private concerns; the United States government owns the rest. In 1944, the Bureau of Mines initiated an oil shale research program. Their excellent work in the development of the room-and-pillar technique of mining oil shale has shown oil shale mining costs to be reasonable. (See Rock Products, March 1952, p. 80.)

The Union Oil Company's retort has operated successfully at a rock throughput rate of 550 tons per day. With it, the firm is attempting to demonstrate that liquid fuel can be extracted from the Colorado shales on a commercial basis in competition with domestic crude oil.



The aerial tram (circled) whips down the mountainside from the primary crusher (circled) to this stockpile. Shale is then conveyed to another crushing plant at the left

Several experts have voiced the opinion that supplies of crude oil in this country may, within a few years, fall short of demand. Currently the United States imports about a million barrels a day—a practice that could lead to difficulties should there be any disruption in foreign sources of supply. The breakthrough in the oil shale industry provides an effective security guarantee for the nation.

The term "oil shale" is a misnomer. The material is a coherent rock which physically resembles a hard limestone more than it does a shale. The rock does not contain oil as such; it contains an organic compound called kerogen that turns to oil when heated. The tremendous beds in which it is found in the Rockies are up to 1,000 ft. thick; bluffs of it form the northerly mountain range that follows the Colorado river. It is a wonderful potential market for the rock products industry.

Union Oil Company is currently using the room-and-pillar mining method at their Demonstration Plant. This underground mining program provides both an ore supply for the continuance of retorting studies and an opportunity to better estimate present commercial mining costs.

The strip mining operation took shale from the lower part of Mahogany Ledge, where it outcrops some 1,000 ft. above the valley floor. Rear dump trucks delivered the rock directly to the primary gyratory crusher on the high walls of the bluff.

After crushing, the surface dirt is wasted by a grizzly unit, which dumps it over the face of the high bluff into the canyon below. A 2,000 ft. long

The retort uses a technique similar to a vertical lime kiln—only in reverse

Oil shale

continued . . .

balanced bucket aerial tram carries the relatively small amount of minus 3-in. rock from the crusher to the stockpiles below.

This handy tram, built by an enterprising firm that specializes in ski lifts, carries two four-ton buckets on 1-in cables. As the one at the top of the bluff is automatically filled from a 4-ton capacity holding hopper with hydraulically operated gates and sent down to unload over the stockpiles, the just-emptied bucket at the bottom is pulled up the cable by the loaded bucket's weight. Several large diameter brake drums with wide faces control the tram.

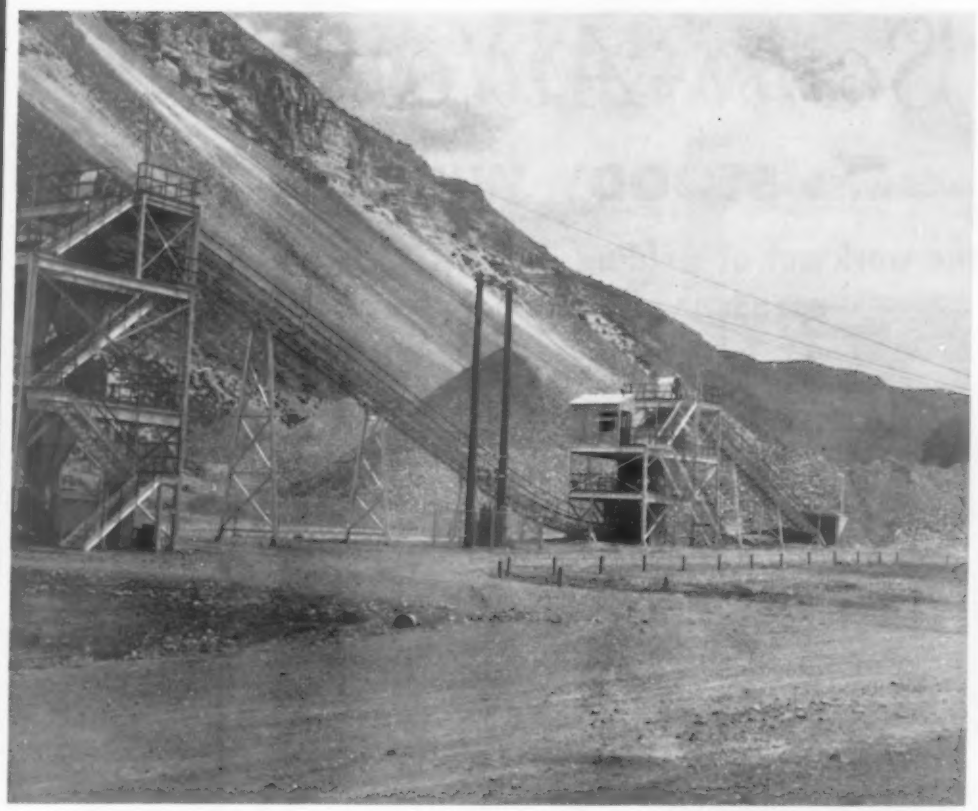
Since the project is an experimental one, several stockpiles of crude rock are maintained. Each has a varied but definite amount of oil present and the Union Oil Company is testing each type for maximum effectiveness. The piles are in a single row under the tramline, and buckets can be preset to dump over any one of them. Grades of rock that are selected to be sent to the secondary screening and crushing plant are dozed to a reclaim tunnel near these piles.

The secondary crusher is a gyratory, of smaller dimensions than the primary. Vibrating screens are employed for sizing. Oversize rock is returned to the crusher.

Crushed and screened rock is sent by conveyor to the retorts, where test runs are made and recorded on each variety found. A continuous weighing recorder is on the conveyor to the retort.

The retort is as tall as a five-story building. It uses an unusual technique that is almost the reverse of the typical vertical lime kiln. Shale is conveyed to a hopper at the bottom and is forced into the chamber by a giant-sized oscillating piston, called a "rock pump." Ignition takes place near the top of the retort, and is fed by residual carbon in the oil shale ash. As the shale is pushed upward by the piston, hot gases from the fire are drawn down through the shale by blowers. These gases change the organic kerogen into oil and gases, which are drawn from the retort at a point just above the place where the rock enters. The ash continues upward and is removed from the top. Since the shale oil vapors condense on the cool incoming shale, the process needs no cooling water. This is an important feature in Colorado, where water is a scarce commodity.

As far as the refining of shale oil is concerned, recent progress indicates that all major problem areas are resolved. In refining, Union Oil finds it is dealing with a black, highly viscous oil containing so much wax that at room temperature you can almost walk on it. Thus, raw shale oil cannot be practically moved by pipeline directly as it comes from the retort. Nevertheless, after the completion



Secondary crushing is in the building at the right. Final screens are located in the tower at the left

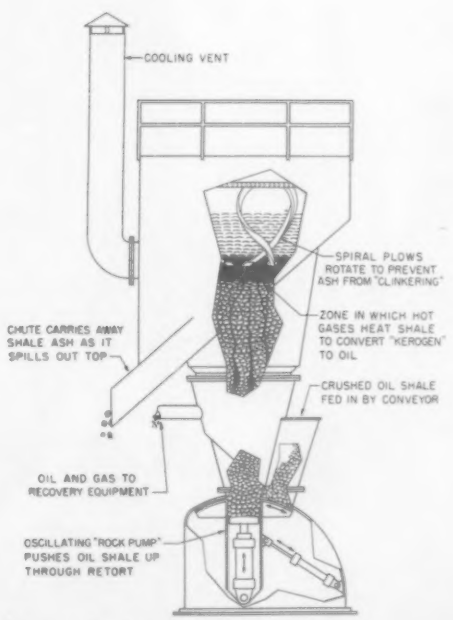
of all necessary refining steps, finished products derived from shale are indistinguishable from their natural petroleum counterparts, just as sugar from beets is indistinguishable chemically from that made from cane. The shale also yields valuable by-products—ammonia, sulfur, coke and fuel gas—which help to lower cost of producing the oil.

Eventually, with other companies in the field, it is possible that production of oil from shale could exceed one million barrels per day. This would mean the mining of roughly two million tons per day. Rock processing machinery for more than half a billion tons per year would be required —a tonnage equal to that of the total sand and gravel production for the United States in 1956. The developments in Colorado can be of major importance in the rock products industry.

MAJOR EQUIPMENT USED BY UNION OIL CO.

Rear dump trucks (22-ton)	Euclid Div., General Motors Corp.
Primary gyratory crusher, 42 in.	Allis-Chalmers Mfg. Co.
Secondary gyratory crusher	Traylor Mfg. Co.
Tram	Heron Engineering Co.
Conveyors	Hewitt-Robins, Inc.

END

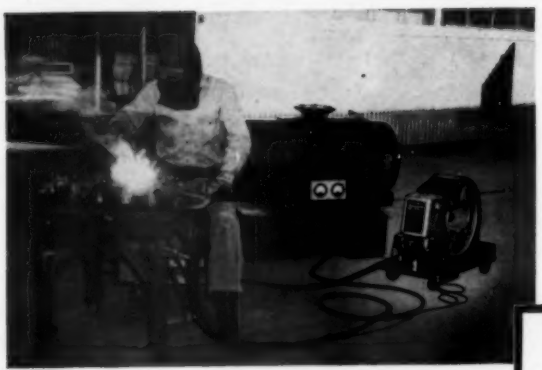

COOLING VENT
SPIRAL PLOWS ROTATE TO PREVENT ASH FROM "CLINKERING"
ZONE IN WHICH HOT GASES HEAT SHALE TO CONVERT "KEROGEN" TO OIL
CRUSHED OIL SHALE FED IN BY CONVEYOR
CHUTE CARRIES AWAY SHALE ASH AS IT SPILLS OUT TOP
OIL AND GAS TO RECOVERY EQUIPMENT
OSCILLATING "ROCK PUMP" PUSHES OIL SHALE UP THROUGH RETORT

Cutaway drawing of the retort

Semi-Automatic

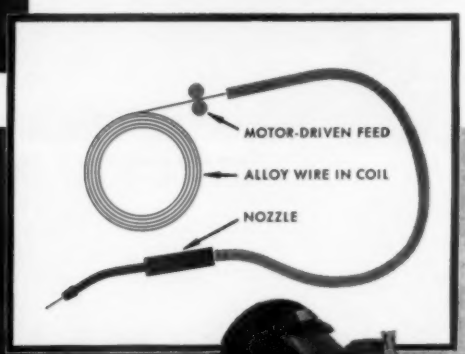
with STOODY WIRES

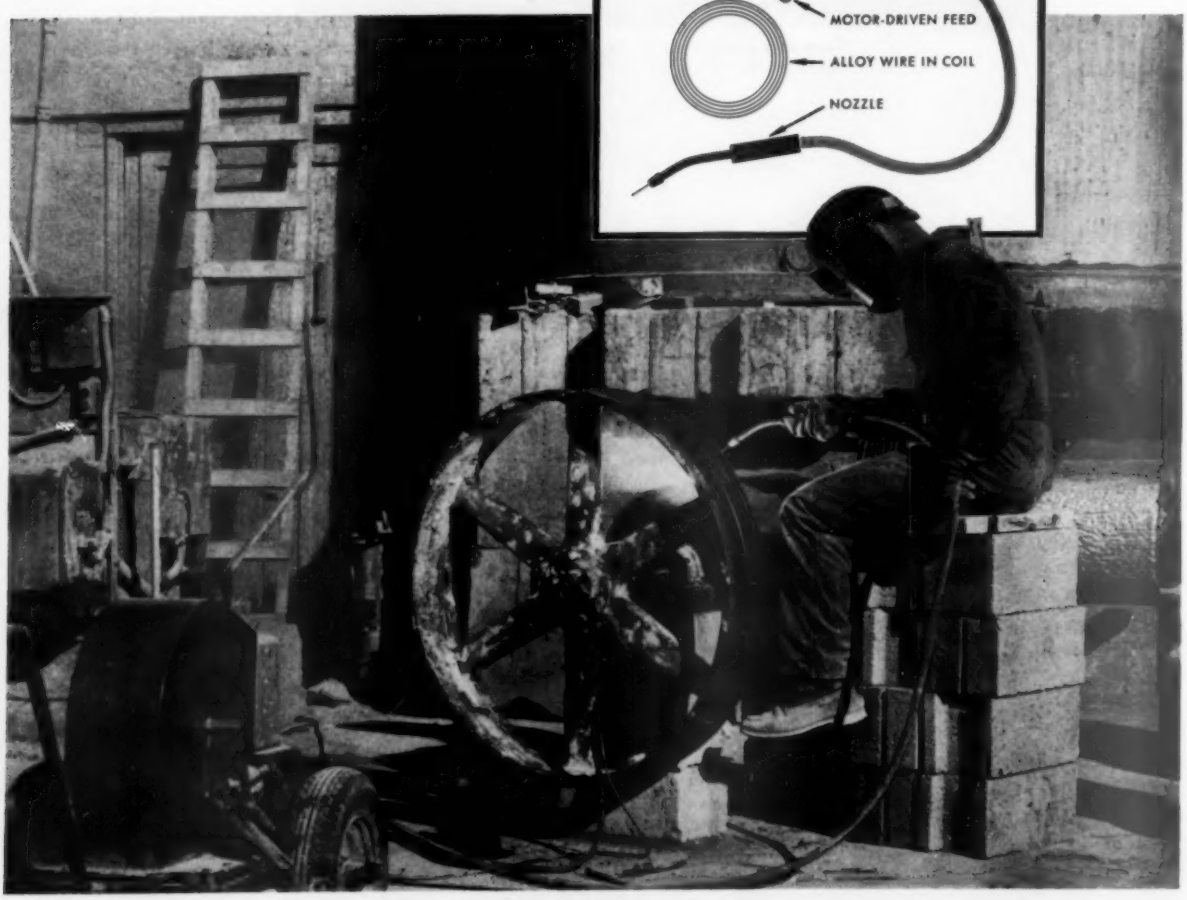
Takes the work out of welding — speeds application — cuts overall costs!



How Stoody Semi-Automatic Hard-Facing Works

Stoody Wires are supplied in layer-wound coils for use on any automatic welding machine, with minor conversions. The wire is mechanically fed to the nozzle by a motor-driven feed roll and idler roll which are actuated when the arc is struck. The welder thereafter merely directs location of the weld deposit, the machine feeding the wire automatically as the arc is struck, stopping when the arc is broken. Certain wires are best applied by submerged arc using the semi-automatic machine with a light positioner for full automatic welding.





Hard-Facing

Semi-automatic hard-facing with Stoody Tubular Alloy Wires is one of the greatest labor-saving processes yet developed for the maintenance man! It hustles you through jobs at speeds 2 to 4 times faster than manual welding. With open arc welding you see the weld as applied, vision is unhampered since most wires are fed bare. This means accurate welding and greater ease when working along edges or welding to a line.

With Stoody Wires you get *low penetration*, this means less dilution and, consequently, a higher alloy content in the final deposit. Wear resistance is thus improved... usually superior to manual electrodes of similar analysis.

Finish on the wire is clean and bright, free from burrs and slivers, insuring smooth feed through the machine. Because the wires are drawn through special sizing dies and annealed after being formed, they are concentric, true to diameter and easy to feed. Special chemically coated papers protect against rusting and the fibreboard shipping container insures all shipments arriving undamaged, ready for use.

When you load your first coil of Stoody Wire you'll find the nylon wrapping especially handy—no heavy wires or straps to remove, yet the wire stays coiled till you're ready to weld!

Remember, with Stoody you get a complete range of proven, time-tested wires, from low alloy to high alloy types, plus a tungsten carbide... all backed by 10 years use in the field!

Nickel Manganese and Stoody 121 Wires are available in 3/32" or 7/64" O.D. Other alloys in 7/64" diameter only. All Stoody Wires feed through most semi-automatic machines with only minor changes in wire guides, feed rolls and nozzle.

For more information see your nearest Stoody dealer, 600 of them, in all parts of the U.S. and Canada (check the Yellow Pages of your phone book) or write direct.

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Stoody 100

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Stoody 100HC

Applications... Catalyst piping, Banbury mixers, crushers and parts subject to severe abrasion

Stoody 102—*submerged arc*

Applications... Cable sheaves, small diameter shafting, shovel idlers and equipment subject to high compressive loads

Stoody 104—*open and submerged arc*

Applications... Designed primarily for build-up of carbon and low alloy steels

Stoody 105—*submerged arc*

Applications... Tractor and shovel rollers and idlers, charging car wheels and parts subjected to severe impact, abrasion, metal-to-metal wear.

Stoody 106—*submerged arc*

Applications... Shafts, cable drums, steel mill roll necks, brake drums, parts operating at high temperature, dry bearing surfaces, metal-to-metal wearing parts.

Stoody 107—*submerged arc*

Applications... Crane wheels, house rollers, mine car wheels, tractor rollers, idlers and shovel parts subjected to severe impact.

Stoody 121

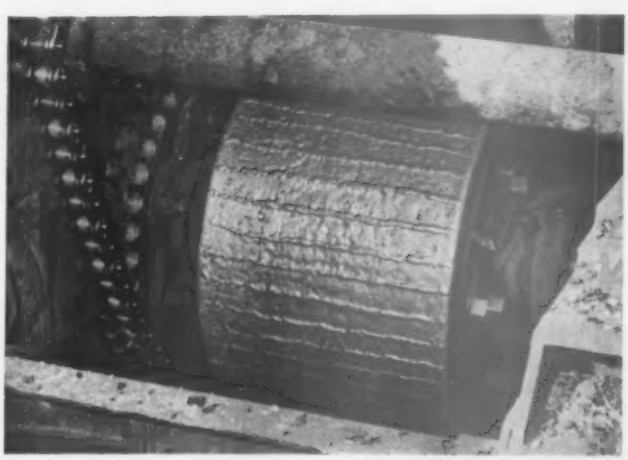
Applications... Crusher rolls, impellers in impact type crushers, bucket teeth and lips, scarifiers and rippers, sheepsfoot tamps, cement mill pulverizer rings, loader lips.

Stoody 130

Applications... Earth boring and scraping operations on equipment such as tool joints, augers, conveyor flights, scraper blades, rippers, dredge cutter blades and concrete mixer paddles.

Stoody Nickel Manganese

Applications... Strength welding and rebuilding of manganese parts



Enter 1446 on Reader Card

Sand, gravel men meet to discuss:

zoning, labor, taxes, rail rates

ONE OF THE COLDEST WEEKS in the history of Chicago saw the annual convention and exhibition of the National Sand and Gravel Association and the National Ready Mixed Concrete Association at the Conrad Hilton Hotel, February 8 through 13. The frigid weather didn't chill the enthusiasm of the more than 7,000 delegates and their wives who registered.

Following the Association's long-established policy, producer problems in the sand and gravel industry were discussed only by producers. There were a number of outstanding papers presented discussing the most significant problems facing producers today. Perhaps the most critical situation is in taxation, but this is closely followed by the problems of zoning, public relations and new markets. It was unfortunate that more producers could not appear in force at the meetings; the largest session had an attendance of only 400, including industry representatives.

However, this was one of the most successful conventions and exhibitions that the associations had staged for its members. Many producers and manufacturers who came pessimistic left Chicago optimistically. Most manufacturers who exhibited were delighted with the number and quality of the serious inquiries at their booths.

Rail rates, taxes, public relations, zoning. One of the most successful sessions at the convention was the well-attended meeting in the Waldorf Room of the Hilton on February 12. A group of four papers discussed some of the most urgent and significant problems facing the sand and gravel industry. These were—public relations, zoning, severance taxes and rail rates for sand and gravel.

By far the most thought-provoking dissertation was given by Dr. Ellis E. Jensen, who outlined the rapid decline in rail haulage of aggregates. He not only stated the opinion that the cost accountants for the Interstate Commerce Commission do not know how to calculate rail haulage costs realistically, but offered his calculations which show that ICC cost figures are exaggerated from 40 to 80 percent.

Actually, the railroads benefit from short haulage of sand and gravel; in fact, when costs are figured on a realistic rather than on a synthetic basis, sand and gravel is a highly profitable business. The problem, of course, is to get rail managements to realize that they should not drive away this business but should encourage it.

Sand and gravel producers, he said, should not ask for rate reductions where the existing rate is

Please turn to page 86

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Boost Blast Hole Footage with Bucyrus-Erie Rotaries

Blast hole footage increases fast when Bucyrus-Erie rotaries move in. Look over the capsule stories with the drills pictured. You'll see how important features helped these Bucyrus-Erie rotary users put down hole fast. You, too, can benefit from the high production of Bucyrus-Erie rotaries. These speedy rigs are available in two sizes — the full-electric 50-R for drilling 9⅞ to 12¼-in. holes, and the 40-R with either full-electric or diesel-electric power for drilling 6¾ to 9-in. holes. Write us today for illustrated bulletins. 78858C

A Familiar Sign at Scenes of Progress

BUCYRUS-ERIE COMPANY • SOUTH MILWAUKEE, WISCONSIN

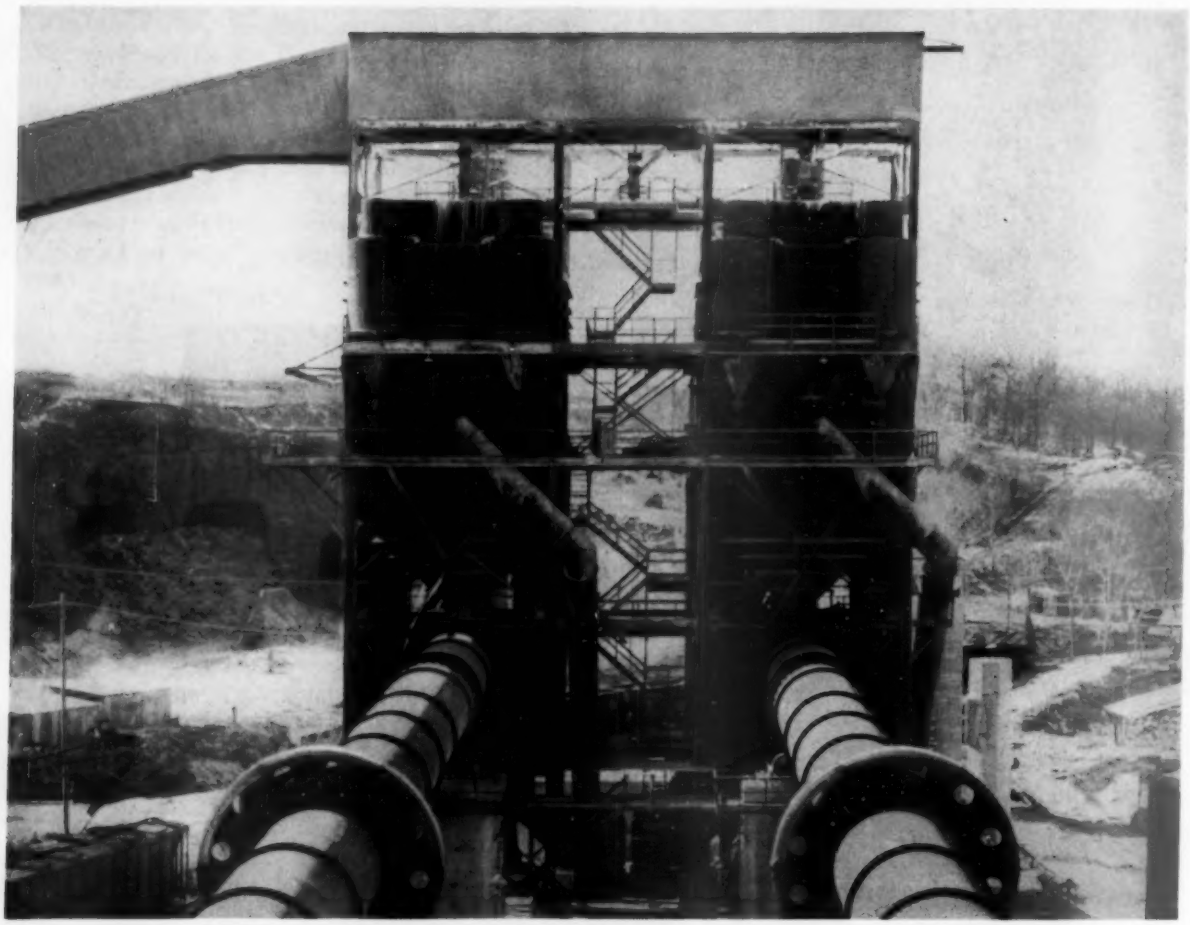
WISCONSIN A 50-R cuts through tough, hard-to-drill quartz and granite at this quarry in northern Wisconsin. It achieves the greatest possible penetration in this hard rock because maximum down pressure can be exerted on the bit while the drill pipe is turning slowly. Hydraulic pulldown provides controlled load on drilling tools.

ONTARIO, CANADA The Ward Leonard variable voltage system on this 40-R gives the operator smooth, instant command over rotation of the drill pipe. He can choose the most efficient speed for a given formation. To meet requirements, he can vary the speed without stopping the drilling operation. The machine is drilling blast holes in construction of Lambert Lock on the St. Lawrence Seaway.

PENNSYLVANIA Quartzite segmented by fissures and seams makes drilling difficult at this Pennsylvania quarry. But when the 40-R drill shown here was put on the job, footage increased so noticeably that the 40-R was made a permanent part of the production set-up. One of the features that contribute to the 40-R's fine performance at this location is air bailing of cuttings. Compressed air cools the bit and cleans out cuttings, eliminating the need for water — especially important during cold weather. Heavies pile up adjacent to the hole, provide handy stemming material and permit dry sampling.

CALIFORNIA This 50-R drill is so speedy that it was able to replace two cable tool rigs and a rotary that had been working full time at a California cement quarry. Due to the fine performance of the 50-R at this quarry, a smaller 40-R was added to the production team. To speed progress, the 40-R drills continuously for 27 ft. 9 in. and the 50-R drills continuously for 32 ft. 9 in. — the full length of drill pipe.

KENNEDY LIME PLANTS



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E. K. Davison on public relations: "We've made a lot of progress getting our program across to our producers."

William C. Rhodes introduced a public relations movie prepared by American Aggregates Corp.

Richard E. Hole: "Cultivate the zoning experts."

Harold M. Lacy, discussing severance taxes, said: "Severance taxes are usually IN ADDITION to sales taxes."

Dr. Ellis E. Jensen on rail rates: "Don't ask for reductions where existing rates are moving the goods."

Roy E. Weaver, giving his final report to the membership: "Our resources are continuing to improve . . . assuring long continuance of life . . ."

Sand and gravel meet

continued from page 82

moving the goods. But they should seek a rate structure that will produce business rather than consume paper and ink.

Dr. Jensen offered a program for serious consideration by the railroads, the Interstate Commerce Commission, and the sand and gravel producer. These include: An overhaul of the cost finding structure of all regulatory bodies to eliminate grossly erroneous computations of haulage costs, and to eliminate discriminatory subsidies of rail competition. The railroads themselves should be skeptical of past cost studies, re-examine long and short haul rates with a view to increasing density of traffic, and push for renegotiation of wasteful work rules with the rail Brotherhoods.

These labor unions should now be willing to discuss work rules which can no longer be justified on economic or ethical grounds. Several Brotherhoods have indicated to Mr. Jensen a willingness to face the hard, unpleasant facts about the sorry state of many railroads and to negotiate sensible work rules.

Harold M. Lacy told the assembled producers about the growth and increase in severance taxes, which pose a threat to their continued existence in several states where the rates have become a burden and a penalty to the producers of sand and gravel. Fortunately for the industry this form of taxation does not exist in many of the most important gravel producing states, and several states have rejected this source of revenue. Yet, it is a threat which must be carefully watched: modest rates invariably increase rapidly, and the tax is almost always figured in addition to state and local sales taxes.

Please turn to page 91

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for aggregate handling, use orton experience

EXPERIENCE means a great deal . . . especially at ORTON where "production-line" manufacture is maintained only so long as the cranes on the line are engineered to the latest, *proved* design for *your* job. For, since Orton can't build *all* the cranes, it builds only the best.

ORTON, *first* with *Torque-Control*, *first* with air-operated controls, *first* to apply new techniques *which have been proved*, is also the *first* to recognize that *each handling job is unique*, thus, an ORTON crane is built for *you*—*your* job—*your* specification.

Consider ORTON first—it *is* first.

EVERY ORTON CRANE has:

. . . ALL power shafts carried on sealed anti-friction bearings—NO exceptions.
. . . ALL motion entirely independent.
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THE MOST POWERFUL NAME IN CRANES

KOEHRING WORK CAPACITY *in action . . .*

A new 2-yard — Latest addition to the big Koehring line of excavators for mining and quarrying is this new 805. It's a heavy-duty 2-yard machine, with 25-foot deep-section shovel boom, and 18½-foot dual dipper sticks. You'll like the 805's power, strength, stability in heavy digging — and *extra capacity* as a dragline or crane for stripping, stockpiling, lifting. It handles 2 to 3-yard dragline bucket — lifts up to 52 tons.

"Diving" for gravel — Loading out of a water-filled gravel pit (right), this 405 dragline puts production on a big-tonnage basis. It has plenty of work-radius for this type of operation — can be used with 40 to 90 feet of boom, and handles 1 to 1½ cu. yd. bucket depending on weight of materials. Check its other work capacities on opposite page, then let your Koehring distributor show you what the 405 will do for you.

Re-working a slag bank — Once cast aside as waste, slag is now being reclaimed from this bank, run through a crusher, and used as sub-base material on road construction. During the process, slag is swept by a magnet to remove any scrap metal. Here, a Koehring 1½-yard 605 shovel loads the slag into Dumptors for haul to crushing plant. This combination of Koehring shovels and Dumptors makes a heavy-duty, high-production team. 6-yard Dumptor® climbs 24% grades fully loaded, dumps in one second, travels at same high speeds in either direction — no need to turn.

Mining copper ore — At this open-pit mine in the Southwest, overburden has been stripped down to pay-dirt. Next, a Koehring ½-yard 205 loads out copper-bearing ore for haul to smelter. Powerful crowd, fast retract, smooth swing, and instant dipper-trip speed production in the pit, keep trucks on the run.

Here are some figures that will interest you:

KOEHRING MODEL	SIZE DIPPER	LIFT CAPACITIES (Crawler ratings based on 75% of tipping load. Rubber-tired machines — 85% of tipping load.)	
205 CRAWLER	½-Yd.	20,000 lbs.	at 10-ft. radius
205 ON RUBBER	½-Yd.	30,000 lbs.	at 12-ft. radius
305 CRAWLER	¾-Yd.	30,000 lbs.	at 12-ft. radius
305 ON RUBBER	¾-Yd.	50,000 lbs.	at 10-ft. radius
405 CRAWLER	1-Yd.	40,000 lbs.	at 12-ft. radius
445 ON RUBBER	(Crane only)	90,000 lbs.	at 15-ft. radius
605 CRAWLER	1½-Yds.	72,300 lbs.	at 12-ft. radius
805 CRAWLER	2-Yds.	104,200 lbs.	at 12-ft. radius
1205 CRAWLER	3-Yds.	190,000 lbs.	at 12-ft. radius

Want more information? *See Koehring distributor*

KOEHRING DIVISION OF KOEHRING COMPANY, Milwaukee 16, Wis.

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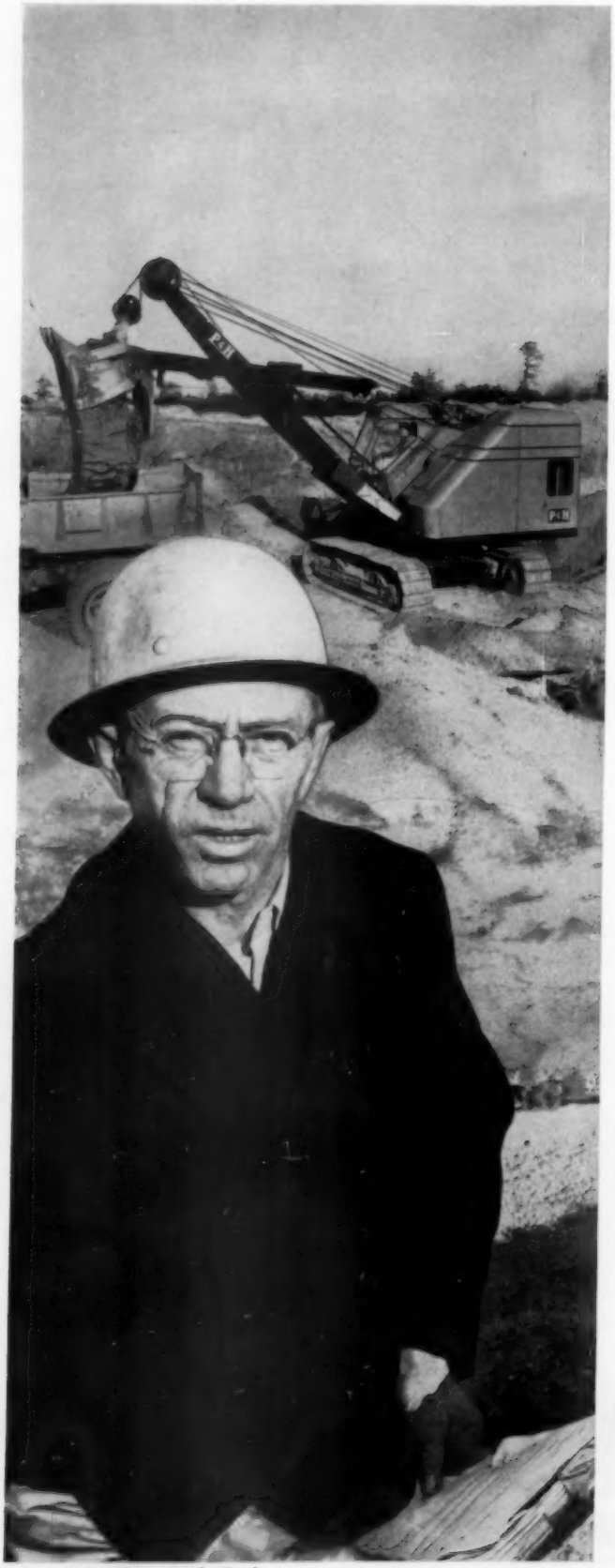


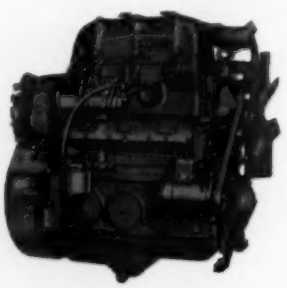
"Power to really dig in and do a day's work"

Mr. Wulf, general manager of Monmouth Trucking Company Sand and Gravel Pit, is enthusiastic about his P&H Diesel powered ¾-yard P&H 255A shovel. You hear reports like his everywhere about the P&H Diesel. It consistently makes good equipment perform better and results in less downtime for maintenance.

Until Harnischfeger developed the P&H Diesel, owners had to be satisfied with diesels which did not fully utilize all the potential of their equipment. But now, P&H Diesels have changed this situation with:

- **better response, faster starts, better idling than any other make of diesel**
- **delivers more power with less fuel—uses low-cost No. 2 diesel fuel**
- **25% fewer working parts and all wearing parts are interchangeable**
- **compact design results in easier maintenance—smaller parts stock**

For all of your equipment—including crushers, front end loaders and other portable equipment—specify the one diesel with all the features that deliver top performance—P&H Diesel. P&H Diesel Engine Division, Crystal Lake, Illinois.



P&H DIESELS

Fastest Growing Name in Diesel Power

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Vincent P. Ahearn on the McClellan investigation: "You can't win a labor union with favors."

Charles A. Horsky on labor: "Multi-employer bargaining is legal . . ."

Sand and gravel meet

continued from page 86

The progressive American Aggregates Corp. was very much in the program when their film on land restoration showed their very positive and aggressive approach to good public relations in Ohio. Richard E. Hole outlined the company's approach to zoning, which not only resulted in good public relations, but which enabled the company to continue sand and gravel production in and near the populated areas which American Aggregates serves. Any producer can minimize his zoning problems if he knows and understands his local zoning laws and the powers and the personnel of the zoning boards. Like many other problems the producer must face, the most effective way to combat the arbitrary and capricious enforcement of zoning is to enlist public understanding of the aggregates business, conduct the business in a way that does not antagonize the community, and for each producer to take immediate steps to protect property rights when faced with restrictive zoning enforcement.

Highlight of the papers on February 13 was the report by Richard Campbell on the new 1,000 tph. gravel plant of Harry T. Campbell Sons' Corp. at Towson, Md. Because the raw material is variable in quality, the plant has been designed to eliminate the contaminants, mostly clays, and to produce six sizes of gravel and three sizes of sand.

W. L. Price of the Dravo Corp. brought producers up-to-date on the various methods of gravel beneficiation which have been in existence for a number of years. The most recent machine to be introduced to the aggregates producer is the adaptation of the Baum jig. This machine has been used in the coal preparation industry for many years, and is just now finding application in the sand and gravel industry.

Ewan Clague, Commissioner of Labor Statistics, discussed the Consumer Price Index

A newer development is the Belknap washer for beneficiating aggregates. Since only one unit has been put into operation, it is too soon to announce its production characteristics.

The labor scene. One of the joint meetings on the last day of the convention was a group of three papers on governmental influences in the sand and gravel industry. Vincent P. Ahearn spoke forcefully and effectively, as only he can, about the McClellan Investigation.

The administration, he said, has no labor policy. While it is obvious that unions have too much power and have abused their powers, many of these abuses are by the default of the President and many employers.

Compulsory union membership should have been dealt with more effectively by the administration. A case was cited on the West coast in which a union member lost his membership and his job when his wife voiced her candid opinion of labor unions. Compelling all workers to join a union be-

Please turn to page 93

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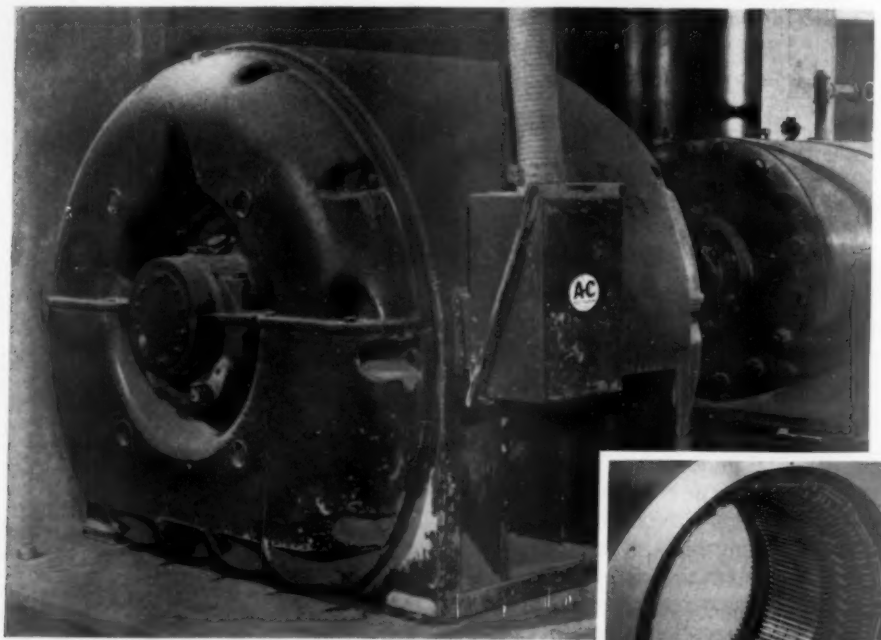
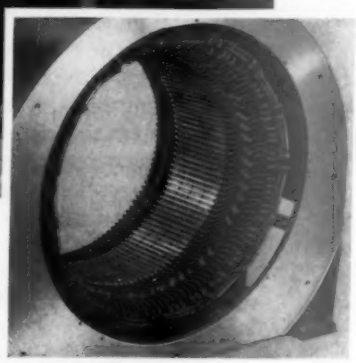
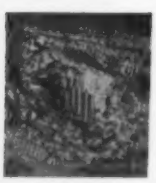
motor with void-free insulation



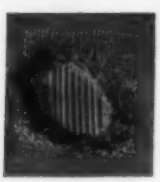


The motor that dust and dirt can't hurt

Silco-Flex Insulation



Polyester Mica Tape



Asphaltum Mica Tape

Note difference in abrasion!
Insulation shown after sandblasting for one minute with 90-grit aluminum oxide and 100-psi air from distance of six inches.

REDUCE motor clean-up frequency and schedule this downtime at your convenience by using *Super-Seal* motors in areas where there's abrasive dust and clogging dirt. These motors —

Resist abrasion: Rubbery *Silco-Flex* insulation used in *Super-Seal* motors resists the cutting action of abrasive dust particles. Unlike conventional insulations, *Silco-Flex* insulation is flexible and resilient.

Completely sealed: *Super-Seal* motor insulation is sealed against contaminants. The vulcanized void-free dielectric barrier of *Silco-Flex* insulated stator coils even resists penetration by carbon black particles.

Combined with void-free *Silco-Flex* insulation are integrated mechanical features that make this motor especially suited to your toughest applications.

Get details! Call your nearby A-C office, or write Allis-Chalmers, Power Equipment Division, Milwaukee 1, Wisconsin.

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Rock Products safety trophy was presented to Walter B. Evans, American Aggregates Corp., by Roy E. Weaver, outgoing president of NSGA

H. J. Feraud on safety: "Safety campaigns are important to the producer."

Sand and gravel meet

continued from page 91

cause they are supposed to all benefit from union demands is sheer hypocrisy. Unions were willing to claim to speak for all employes when they signed the contract, even those not members.

Employers should take the initiative to look after employes' interests, and they should win back the initiative in dealing with unions. One "revolutionary" method, he suggested with a smile, was for the employer to read and understand the labor contract before signing. He called attention to the fact that a large and increasing number of grievances brought to mediation by employes are against unions, not employers. Employers should take advantage of the widespread opinion of workers that the union shop should be outlawed as well as the closed shop.

One of the excellent ways of identifying worker and employer interests is through a well-developed safety program. A method of communication such as a company paper, company meetings and suggestion boxes will help the worker identify himself with his employer and will help the employe realize that he is an important part of the business.

The administration's proposed Labor Reports Act to limit union corruption, the latest developments in group bargaining by employers, and some notes on secondary boycotts (especially the "hot cargo" clauses in labor contracts) were the high points of a talk given by associations' counsel Charles A. Horsky at the final general session of the convention on Friday, February 14, 1958.

First, the proposed bill is designed to strengthen the Taft-Hartley Act by prohibiting secondary boycotts and the "farming out" of a struck employer's work to other firms. It does this by making a strike legal against those who take on the farmed out work. It would also limit recognition and organizational picketing, since the group that usually suffers most is the public.

A. D. McKee, McKee Bros., Inc., accepts the ROCK PRODUCTS safety trophy from Roy Weaver

The proposed Labor Reports Act is the best known of the bill's provisions. It would prevent corruption of the type found in the Teamsters Union by: requiring registration and detailed annual reports of union health and welfare plans with the Secretary of Labor. It would also require the filing of union annual reports with the Department of Labor; require that unions' books and records be open to members; require that constitution, by-laws, and organizational procedure be filed with the Department; show that officers are elected by secret ballot at least every four years; require unions and employers both to report to the

Please turn to page 96

PROOF!

To Whom It May Concern:

You can be sure of making the wisest investment and obtaining the most productive equipment by inviting leading manufacturers to participate in competitive on-the-job demonstrations with qualified operators.

The demonstration reported here was held last year at my request and I personally kept the records of the times and tonnages in all instances.

The results gave me definite proof of the superior performance of the "PAYLOADER" machine and was the basis for my recommendation for the purchase of this equipment.

Phil Bigham

PHIL BIGHAM
County Engineer
Barton County, Kansas

Independent Tests with Factory-Trained Operators Prove PAYLOADER® Best

You can't make money on manufacturers' claims. It's performance on-the-job that counts. That is why we welcome the opportunity to report the results of independent, unbiased competitive tests such as the one tabled below. "PAYLOADER" tractor-shovels will not only give you greater performance and production . . . they'll PROVE it on your job.

	Run No.	Travel Distance	Model HO PAYLOADER	Machine "A"	Machine "B"
Loading Trucks from Stockpile... Tons per Hour	1	——	432	289	222
	2	——	391	324	254
	3	——	366	311	259
	4	——	358	288	285
Loading Trucks from Windrows... Tons per Hour	5	150 ft.	327	192	207
	6	150 ft.	313	192	178
	7	100 ft.	390	262	240
	8	100 ft.	394	274	253
Overall Average...Tons per Hour			**371**	**267**	**237**

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PURCHASE AND HOUGH LEASE PLANS

Your Hough Distributor offers the widest choice of financing plans: TIME PAYMENT . . . LEASING PLANS*, with or without OPTION TO PURCHASE — whatever one best fits your needs for the purchase of "PAYLOADER" units. See him today.

Modern Materials Handling Equipment

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Send more data on 4-wheel-drive "PAYLOADER" tractor-shovels as checked:

- ☐ HO—9,000 lb. carry cap. (1 to 4 cu. yd. buckets)
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- ☐ HU—5,000 lb. carry cap. (⅝ to 2½ cu. yd. buckets)

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Company.....

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4-B-1

Jermain B. Porter on the association's insurance and medical plans: ". . . the two plans have increased benefit schedules."

Incoming officers of NSGA are: E. P. Gemmer, president; E. K. Davison, vice president; Fred P. Curtis, secretary-treasurer. At right is Roy E. Weaver, outgoing president

Ken Tobin, Jr., also speaking on the insurance plan: ". . . results of the insurance-retirement plan have been gratifying."

Donald Shepherd spoke on the retirement program for the officers and employes of active and associate member companies

Sand and gravel meet

continued from page 93

Labor Department most financial dealings with labor organizations or their representatives; and create a Commissioner of Labor Reports who would keep track of union financial activities.

Horsky also explained the significance of trends in multi-employer bargaining. The idea is now definitely legal, he said, especially if the union is agreeable and there is a history of this type of joint bargaining between the union and employers in question.

Referring to multi-employer bargaining, Mr. Horsky noted that employers now have some protection against being "picked off" one at a time by the union striking against one employer at a time. Those whose plants are not being struck are given the legal right to fight this "whipsaw" technique by locking out their workers!

A final significant idea is the "hot cargo" clause in some labor contracts under which unions reserve the right not to carry the goods which ordinarily would be handled by the workers of a struck firm, but which would now be carried by another employer. The latest National Labor Relations Board ruling is that hot cargo clauses are invalid, as far as common carriers are concerned, he said. But the point is not finally settled, for the U. S. Supreme Court is now considering the matter, and should render a decision by summer.

Ewan Clague, Commissioner of Labor Statistics, outlined the development and the limitations of the Consumer Price Index which has become so important to American industry. He cautioned against calling it "a cost of living" index, since families change their purchasing habits continually. As incomes increase, purchasers change their buying habits, buying more luxuries and a relatively smaller amount of necessities.

The importance of the use of the CPI (consumers' price index) idea is great: there are about 4-million workers in unions under agreements tied to this index. About 300,000 office workers have employers who have voluntarily adopted the practice, Mr. Clague estimated.

In conclusion, Vincent P. Ahearn noted that it was unfortunate that the index should be used as an arbitrary means of increasing wages instead of some kind of an index of productivity. In the past few years, he said, wage increases have been larger than the gain in productivity and have added appreciably to inflation.

Safety program. As more compelling new problems face aggregates producers, there is a tendency to overlook the continuing vital importance of safety programs. However, there was no lack of interest

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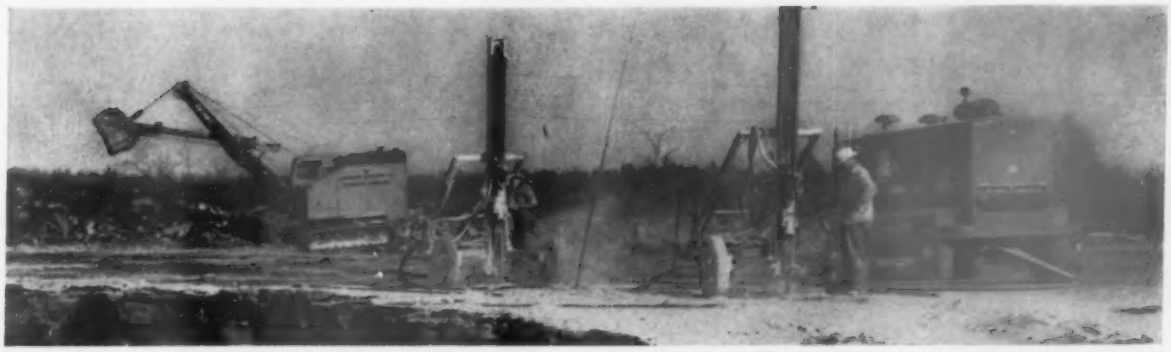

Logging 500' per shift in limestone with low cost Jaeger air.

Jaeger "600" and dual drill rig, both truck mounted, handle several locations.

Track drills and readily truck mounted Jaeger rotaries make mobile "teams."

Only Jaeger gives you 600 cfm @ 1650 rpm

Using the same GM 6-71 diesel engine as all other "600" rotaries, your Jaeger gives you full rated capacity at 150 rpm slower speed (1650 instead of 1800). In 8 hours full load operation that totals 72,000 fewer revolutions, saving miles of engine piston travel and pounds of fuel.

Because all operation is below the continuous horsepower curve, engine maintenance is at a minimum. As for the compressor unit itself, many Jaeger rotaries have logged more than 8000 hours without requiring the replacement of a single vane.

125, 250 and 365 cfm models are comparable (1700 rpm full load speed instead of 1800 up). The difference puts money in your pocket. Ask any Jaeger user — or ask us for Catalog JC-7.

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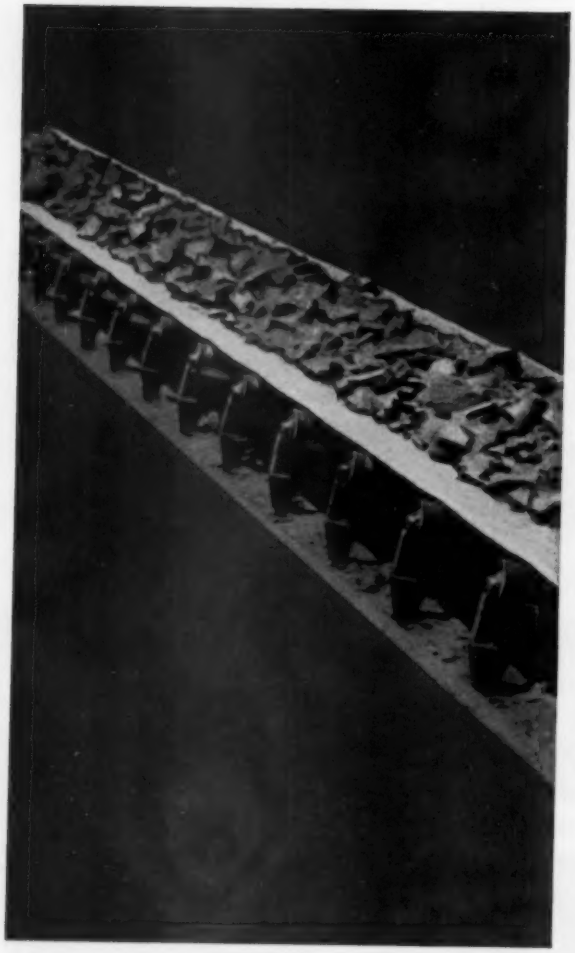

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...it's the Last Third of an R/M Conveyor Belt that Gives

"More Use ~~per~~ *for your* Dollar"

It's the *last* one-third of conveyor belt life that determines its final cost. Real conveyor belt cost is the cost per foot of belt in terms of load carrying capacity for the *potential service life of the belt.* R/M's new conveyor belt construction now assures you ⅓ longer belt life! Here's why:

R/M engineers recognize that every belt feature—troughability, resiliency, fastener holding ability, strength member fabric, cover toughness and thickness—help determine the true cost of Ray-Man Conveyor Belt on your job. And that's why every Ray-Man component is precision proportioned to assure better belt balance where it pays off most for you—in longer belt service life!

Let an R/M representative show you how *extra* life in the last ⅓ of conveyor belt service means "More Use per Dollar" with Ray-Man Conveyor Belt and other R/M heavy duty constructions.

RAY-MAN CONVEYOR BELT

- **Trains Naturally**
- **Resists Impact and Ripping**
- **Double Compensation Relieves Outer-Ply Stress**
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- **Requires No Breaker Ply**
- **Exclusive "XDC" Long-Wear Cover**
- **Moisture Resistant, Mildew-Proof**

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is the reason why MAGNECON* is acknowledged as the leading hot zone refractory for rotary kilns all over the world.

Magnecon*—a true product of scientific refractory research—is subject to 24-hour chemical and mechanical tests at the mine and plant of CRL. For instance:

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Experts operate the brick presses. Samples of the brick are analyzed regularly to insure complete uniformity.

Engineers check the selection, mixture and density of the clinker. A similar close watch is maintained at every stage of the manufacturing process at CRL's Marelan plant.

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Optical pyrometer readings double-check the automatic temperature controls regulating the kiln operations at the CRL plant— the world's most modern refractory plant.

Scientific tests are conducted in the completely equipped CRL plant laboratories. Here, the unique properties of Magnecon* were first developed.

For a hot zone refractory that will build up and hold a sound coating—give you more production and greater economy—you can rely on MAGNECON*

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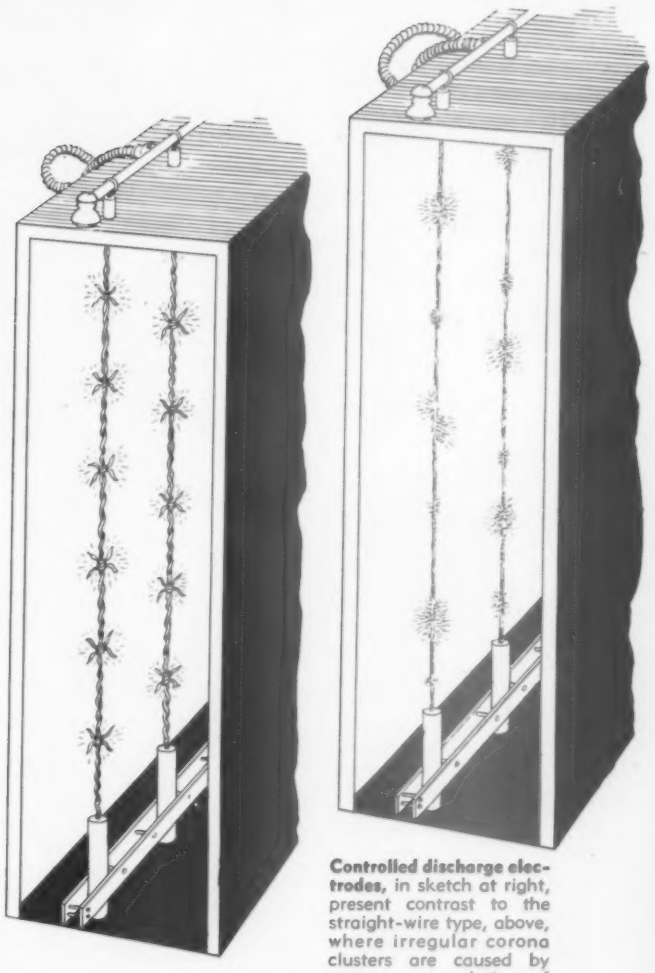
Barbed electrodes—a new idea in dust control



Controlled discharge electrodes, in sketch at right, present contrast to the straight-wire type, above, where irregular corona clusters are caused by uneven accumulation of dust

A PROBLEM PLAGUING PRECIPITATOR MANUFACTURERS for almost half a century—dust accumulation on energizing wires—has been solved by replacing the straight-wire energizer with an electrode which closely resembles ordinary barbed wire.

Uneven dust buildup had an insulating effect on the electrode and caused an unpredictable and uncontrolled pattern in the corona discharge, key factor in the precipitating action. This buildup does not occur on the barb points, therefore the electrical discharge remains under constant control. In announcing this development, engineers of Koppers Co. Inc. point out that two results are obvious: greater power may be applied and higher efficiencies obtained in existing equipment, and smaller precipitators will be able to do the work formerly requiring larger ones.

Comparing the efficiency ratio of the controlled electrode with the conventional electrode, engineers have said that at 35,000-v. input, the barbed electrode delivers approximately 70 milliamps and the conventional wire, 35 milliamps.

Successful application of the new type of electrode may revolutionize the field of industrial gas cleaning and air pollution control. As the gases pass through the precipitator fields, solid particles receive a negative charge from wire energizing electrodes and are then attracted to grounded collecting plates. Efficiency of any such unit is in direct proportion to the power that can be introduced into the energizing electrodes without a "flash-over" to the collecting plates.

Material on the surface of the plates is dislodged by frequent, automatic rapping. Energizing electrodes also are rapped at frequent intervals, but the new way prevents the uneven accumulation of dust which causes the uncontrolled electrical discharge and undesirable flash-over which reduces efficiency.

Controlled discharge electrodes will be installed in a Koppers precipitator at the Roanoke, Va., plant of Lone Star Cement Co. In another interesting application, efficiency of the electrodes will be challenged by their installation in one of the oldest precipitators in regular operation—at the Crestmore plant of Riverside Cement Co., which went into service in 1912.

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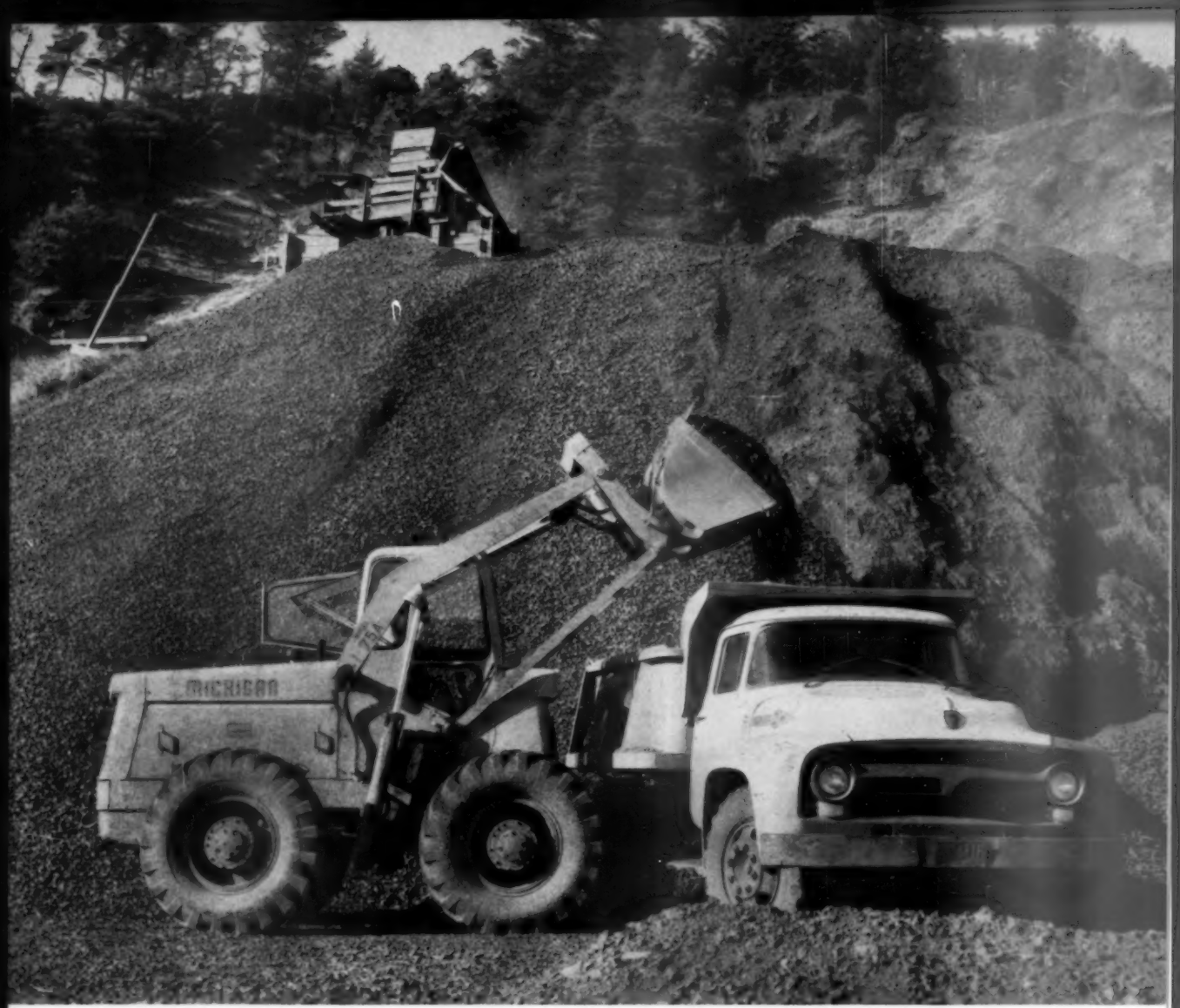

In 3 years, 1¼ yd Michigan loads 300,000 yds of rock. Yet...

REPAIR COSTS TOTAL $18.45

In studying most efficiency reports, you have to remember one extremely important fact: that the data given usually cannot legitimately be applied to machines now available. Changes galore—for good or bad—have been made since the veteran unit was built. That is why this report seems to us so significant. The Michigan Tractor Shovel described is in every important component EXACTLY like the Michigans made today. In fact, all 8,000 Michigan Tractor Shovels built have been like the first one—a tribute to the efficiency of design and efficiency of their all-Clark designed and built power trains.

For the past three years. Yaquina Head Quarries, Newport, Oregon, has used this Model 75A Michigan Tractor Shovel 6 to 8 hours a day, 5 days a week, truck-loading crushed rock. The machine has handled over 300,000 yards of material, ranging in size from ¼" to 4" minus.

Its only downtime in all these months has been for changing points and plugs, and for replacing two emergency brake cables.

The work took less than 30 minutes and parts cost exactly $18.45.

For this superb record, credit belongs partially to excellent machine design and construction . . . partially to Plant Supt Virgil Landess' insistence on a simple, regular, preventive maintenance program. The Michigan is greased every day. Rear end and torque converter are checked twice a week. Oil is changed every 40 hours, filters every 80 hours, and a one-hour maintenance check made every two weeks.

"Cheap insurance for keeping an excellent machine excellent," says Quarry Owner Roy Sawyer.

Stock-piles at the Yaquina Head quarry are located in a quarter-mile semi-circle around the crusher, on two levels. Good brakes, excellent visibility, 26 mph speed, fingertip power steering combine to cut travel time between loading locations.

Material—after shooting, secondary shooting, crushing, and normal 2½-to-1 swell—weighs 2600 to 2800 lbs per yd. Mostly basalt, tests show a very small percentage of iron in the rock. Assays have picked up gold, too—80c worth per ton.

Steep 20% grade between stockpile levels proves no problem for the powerful four-wheel-drive Michigan—even in wet weather.

Among the many odd jobs done by Yaquina Head's quarries mobile Michigan Tractor Shovel: moving a 4,000 lb crusher head.

Loads typical truck in one minute

The 80 hp Michigan speeds all kinds of scattered assignments. It lifts crusher heads, for example. Picks timbers. Sets motors. But mostly it loads trucks. "Everything from pickups to 15 yard semis with 8 ft high sides," describes Owner Sawyer. A typical 5 yard truck is loaded in four bucket-fulls. Time: 1 to 1½ minutes.

Reduces truck waiting time 80%

Fast loading—plus fast travel between the nine stone stockpiles—has cut truck waiting time to practically zero. "In the old days—when we handled loading with a ¾ yard rubber-tired machine of another make—trucks often had to wait 10 to 15 minutes each for loading service," remembers Mr. Sawyer. "That old machine couldn't load out more than 250 yards a day. Our Michigan easily loads 400 to 500 yards a day. And it *has* loaded as much as 835 yards (in 8 hours)."

Eight models now available

How do your production requirements compare? If they're the same (or less), your most economical bet for the job probably would be a Michigan 1¼ yard all-wheel-drive model (like the machine described here). For greater output, you have a wide choice of bigger machines, with 2, 2¾, *and the new 4 or 6 yard buckets* (standard SAE measure). For clean-up around crushers and belts, there's a 16 cubic *foot* size. Eight standard models in all. See your Michigan Distributor for details.

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Construction Machinery Division
2481 Pipestone Road
Benton Harbor 7, Michigan
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CLARK® EQUIPMENT

dust-free plants cost less to run

This plant costs less to operate because Dracco Dust Control protects product purity and avoids serious clean-up problem. Binney & Smith, Inc., manufacturers of nationally known "Gold Medal Crayola® Crayons", selected a Dracco system to collect organic pigment dusts from production units (below).

Uncontrolled dust in your plant can impair employee health or working efficiency, shorten machine life, contaminate critical materials, cause excessive plant clean-up and maintenance costs and disrupt community relations.

You can trap dust at its source, and eliminate its nuisance, irritating, toxic or abrasive effects—with Dracco Dust Control Equipment. Men and machines work better in clean, pleasant surroundings. Absence of dirt and corrosion keeps maintenance costs lower.

If dust is sapping your profits by causing production slowdowns, downtime and personal discomfort, take positive action. Call or write Dracco today.

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HERE'S HOW TO REDUCE COSTS WITH DRACCO DUST CONTROL:

- **Eliminate health and safety hazards by stopping spread of toxic dust**
- **Lengthen machine life by preventing abrasive wear**
- **Protect vital materials by trapping contaminating dusts**
- **Cut plant housekeeping costs by eliminating clean-up problems**
- **Improve community relations by halting air pollution**

Complete 40-page catalog on Dracco Dust Control Equipment contains detailed data and valuable reference material. Write for Bulletin 800.

DRACCO *airstream* conveyors
dust control equipment

FULLER COMPANY GENERAL

Enter 1438 on Reader Card

Morgan J. Kilpatrick on quarry operation efficiency: "... neglect of your small time losses can pave the way to the skid row of lost profits."

T. C. Cooke's speech delved into quarry efficiency

R. T. Lassiter on recent trends in plant design: "One man centralized control is a definite trend."

Crushed stone members hash out industry problems

THE WEEK OF FEBRUARY 15 through 19 in Chicago was just as cold as the preceding one for the meeting and exposition of National Crushed Stone Association at the Conrad Hilton Hotel. Over 2,000 registered for this meeting and only unseasonal weather in many parts of the country kept attendance down. A large number of producers who are active in both sand and gravel as well as crushed stone took the opportunity to stay over in Chicago for both shows. Many ready-mix producers are active in the concrete products industry and they, too, were able to profit by staying on for the meetings of National Concrete Masonry Association at the Sherman Hotel February 17 to 20.

There was emphasis on problems of wider interest to all members at the crushed stone meeting, but the programs were of significance to every member of the industry.

Efficiency and industry problems. The five papers presented at the operating session on February 18 were selected to be of interest to all crushed stone producers, and the speakers were chosen for their knowledge of their field.

T. C. Cooke opened his talk on quarry efficiency by reading the editorial from January 1958 issue of ROCK PRODUCTS, "'Efficiency' is a Big Word This Year." Mr. Cooke reported the results of a survey he made of the quarry industry based on the production of the primary crusher per man-hour of labor. Of all those reporting, efficiency ranged from 4.17 to 7.7 tons of production per man-hour.

However, this did not tell the whole story, so he broke the figures down to "hard" and "soft" stone production. Of the 27 producers of limestone, dolomite, slate and other relatively soft rock who reported, the average production was about 5.9 tpmh. Among producers of hard rock, quartzite, diorite, trap and basalt, the average of 20 quarries was 5.7 tpmh.

Other speakers at the meeting were M. J. Kilpatrick, engineer of the U. S. Bureau of Public Roads, Washington, D.C. who spoke on "Studies on the Efficiency of Quarry Operations;" and R. T. Lassiter, district manager of Western-Knapp Engineering Co. in New York. His paper covered "Recent Trends in Plant Design."

At one of the general sessions, four papers were given of general interest to all aggregates producers. The papers covered the major problems facing the industry—blasting, public relations, aggregates specifications and legislation.

Please turn to following page

O. E. Benson, General Crushed Stone Co., was elected president of NCSA

Members of the Association's staff: H. M. Bixby, Beatrice Gay, J. R. Boyd

Warren C. Rowe, right, Malden, Mass., was elected vice president. J. Reid Callanan, South Bethlehem, N.Y. was elected secretary-treasurer

Crushed stone meeting

continued from page 105

Earl P. Holwadel of Ohio Gravel outlined his company's approach to good community relations and the community's acceptance of their plant operations. Hercules Powder Company provided a movie which showed good public relations at work to solve producers' blasting problems.

Safety program. The annual report of the Accident Prevention Committee of National Crushed Stone Association was presented by Henry H. Kirwin. The members reporting had only one fatality for the year, and 29 of the 86 plants included in the survey reported perfect safety records. It was notable that personal negligence of all kinds caused twice as many accidents as hazardous working conditions.

In spite of the continued keen interest and a declining rate of accidents of many of the members of the association, there were fewer companies reporting accidents and participating in the accident prevention program. Only 43 of the Association's membership of 154 companies reported their 1957 record.

However, the committee will continue to stimulate interest in this vital program. The full reporting of accidents will be continued, editorials will be issued from time to time on safety subjects and the Monthly Accident Review will be continued.

The annual award of the **Explosives Engineer** safety trophy was made to Warner Company of Philadelphia. For the second straight year their Bell Mine at Bellefonte, Pa. was far ahead of the competition to set a safety record of over 277,000 man-hours worked without a lost time accident. The second and third places were won by New York Trap Rock Company and Bessemer Limestone and Cement Co.

The Association is interested in safety, not only for the employes of member producers, but in the application of their products for the safety of the public. A. T. Goldbeck analyzed the importance of aggregates to reduce highway skidding accidents. As the road programs extend superhighways into every part of the nation, the skid resistance of highway surfaces will become of great importance to driver safety. Many so-called skidding accidents are beyond the influence of the surface of the pavement, and these accidents can be prevented by driver education, design changes in automobiles and changes in tire construction. The Association is continuing research into the design and con-

Please turn to page 138

Enter 1443 on Reader Card

Mining shale in South Africa for hemisphere's largest brick company

Coronation Brick and Tile Company, of Durban, Natal, Union of South Africa, largest firm of its type in the southern hemisphere, uses two D Tournapull® Rear-Dumps and a Tournatractor® in its mining operations. The company supplies high quality face and common bricks for most of Natal's building trade, plus roofing tile for much of South Africa and Rhodesia.

The 11-ton Tournapulls haul shale, some stone and sand, to a feeder leading to the factory. In their spare time, Rear-Dumps also haul waste stones and boulders about 2 miles to a dump.

Meanwhile, the company's 210 hp Tournatractor is assigned to mixing materials for brick and tile. This big tractor-on-rubber dozes select overburden down the quarry face, so shovels at the bottom of the cliff can scoop up some clay along with the shale. On occasion, the Tournatractor also constructs and levels roads, as new parts of the quarry are opened.

Tournapulls move 765 yds. daily

When hauling material to the apron feeder, each shovel-loaded Tournapull delivers 9 yards every 8 to 10 minutes. The two machines move 10 loads in a 50-minute hour.

Not only are Tournapull Rear-Dumps stronger, and have better loading capacities than competitive haulers on the project, say company officials, but they work much faster. According to records kept for 21 days, each Tournapull averaged 42½ nine-yard loads of shale daily. Three competitive 4-yard haul units on the job moved an average of 37.6 loads per day.

Tournatractor dozes special clay overburden toward top edge of cliff, seen in large photo above. At the foot of the bank, material is mixed with shale, and shovel-loaded into Tournapull Rear-Dumps for hauling to the factory.

Says Owner S. M. Fletcher, "LeTourneau-Westinghouse machines maneuver excellently. They are rugged. They are doing a good job for us." Quarry Supervisor H. J. Davies adds, "I have worked on many projects in Africa with LeTourneau-Westinghouse equipment. These machines work better than any other earthmoving product!"

Give excellent service

Each of the Tournapull Rear-Dumps has been used for more than 7,000 hours. Tournatractor has been used in excess of 5,000 hours. All three machines have given excellent service, with an exceptional record for availability say company officials.

Even though Tournapulls haul very large rocks, the big machines withstand loading shocks very well, according to Mr. Davies. Tires have worn especially well, although they are always rolling in hard, sharp shale.

Easier to lubricate

Maintenance is easy, too. Men on the job find lubrication points on LeTourneau-Westinghouse equipment more accessible than on any other machines.

Write us for more information on LeTourneau-Westinghouse equipment.

DRCT-1436-M-1

LeTOURNEAU-WESTINGHOUSE COMPANY, PEORIA, ILLINOIS

A Subsidiary of Westinghouse Air Brake Company

Where quality is a habit

Executive committee. From left to right: L. R. Falk, Robert M. Koch, Thomas B. Stafford, Russell W. Hunt, W. E. Hewitt, William E. Stone, Leonard S. Fry, Clarence A. Munz, Robert M. Bridges

NALI seeks better ag-lime legislation

BIG NEWS TO COME OUT of the 13th Annual Convention of National Agricultural Limestone Institute, meeting in Washington, D.C. in January, is active aggressive action on the part of the industry to support legislation designed to increase the sales of agricultural limestone. Such legislation, which may be proposed soon, would place the Agricultural Conservation Program and the Conservation Reserve section of the Soil Bank under one administrative head and provide additional needed monies for the distribution of limestone to farmers.

This attitude on the part of the industry is the result of the "Peterson" incident, as it is commonly known, which occurred this past year. Apparently, the now famous memorandum of the assistant Secretary of Agriculture was intended to cut the annual ACP appropriation in half (from $250 million) eliminating some of the practices involving use of agricultural limestone. Robert M. Koch, president and general manager of the NALI, got wind of the memo, and, with the help of industry associates, was able to scotch the plan of cutting ACP for the fiscal year. It is not known what the Department of Agriculture may recommend for next year, but it is felt that the ACP may get only a $125-million allocation through Congress.

If such proposed legislation be passed, the industry believes that it would establish a federal conservation program that would reduce bickering over the present program and establish a conservation program that would do a real job. Congress already has passed a $450 million appropriation for the current annual Conservation Reserve program, which is not expected to be fully used, and $250 million for the ACP. Combined, the total proposed conservation program would have a real opportunity to do a good job for which it should be designed.

At the same time, the feeling is that the new system would better enable the industry to distribute the 80 million tons of agricultural limestone that agronomists say are needed—instead of 22 million tons annually.

Other highlights of the three-day meeting included a substitution for the usual panel discussion of operations, held normally during an afternoon of the meeting. Instead, producers were given an

Please turn to page 110

Enter 1468 on Reader Card

Building new haul road at Kentucky pit, modern B Tournapulls with 27-yd Fullpak scrapers heap big loads of sticky clay fast. Machines' excellent maneuverability in the cut and on the fill, plus high travel speed permited faster cycles . . . helped lower production costs.

A sure way to "lower the boom" on your stripping costs

When stripping overburden, building haul roads, or leveling sites for camps or drill set-ups — fast, high-production earthmovers can play an important part in keeping your costs down. That's why so many pit owners rely on LeTourneau-Westinghouse Tournapull® scrapers. These versatile machines heap big loads quickly, haul anywhere, and spread fast. Here are 4 big reasons why:

1. Most power used for cutting

When loading, Fullpak® scraper wheels ride inside cutting width . . . hold flat-bottom bowl low (1° flow angle on 27-yd B Fullpak). Dirt slides in easily, almost horizontally. With bulk of power used for cutting — little for bulldozing against high-angled blade — scraper heaps big loads fast. With blade location and bowl shape designed for easy, fast-flow loading, Fullpaks pack in the last yard almost as easily as the first.

2. Easy loading in tough conditions

High apron-lift permits fast loading and unloading of chunky materials. Quick-release clutch on hoist-motor lets your operator rapidly "pump" bowl up and down . . . helps get big loads in loose dead-flowing material. Streamlined bowl construction makes it easy to load next to vertical banks and around obstructions.

3. Poor footing no barrier

When working Tournapull scrapers, there's little need for weather shutdown, nor to extend your haul distance to bypass mud, sand, and soft going. Prime-mover has an exclusive power-transfer differential that automatically slows spinning wheel and transfers up to 4 times the power to wheel on firmest footing. The L-W differential works *continuously* — on turns, through mud and slippery footing, over rough, uneven ground. This gives you better traction throughout any haul cycle . . . for faster, easier, low-cost stripping, roadbuilding, or other dirtmoving.

4. Unloads all material fast

Scraper's positive-ejection tailgate moves straight forward with full power on the thrust. There's no need to lift the load. Tailgate has plenty of power to force out sticky clay, mud, rocks — wipes bowl clean in a single pass. Inside of bowl is cleanly designed, with no angular obstructions to block material flow. Return of tailgate is by electric power — there are no troublesome springs.

Try one at your pit

Put a modern LeTourneau-Westinghouse Tournapull scraper to work in your pit. Use it on any dirtmoving job you wish — stripping overburden, cutting drainage ditches or sluiceways, stockpiling, refilling, landscaping, etc. Check production, check costs! You'll find these units complete cycles faster . . . give you higher production at low cost. 3 scraper sizes with capacities of 9, 18, and 27 yd — diesel-powered 2-wheel prime-movers with 138, 210, 300-or-335 hp. Call for full details.

Convert dirtmover to rugged rock-hauler

For less than ¼ of the cost of the Tournapull with scraper, you can add a Rear-Dump trail-unit to interchange with original scraper behind same prime-mover. In dump position, as shown, 35-ton B Rear-Dump makes continuous 180° turn in just 27 ft — in travel position, 35 ft. Rear-Dump's all-steel body with tri-layer bottom withstands the pounding of heavy rock. Unit dumps smooth and clean over the edge of the bank . . . hauls anywhere. Other trail-units to increase prime-mover's usefulness also available.

P-1835-MQ-1

LeTOURNEAU-WESTINGHOUSE COMPANY, PEORIA, ILLINOIS

A Subsidiary of Westinghouse Air Brake Company

Where quality is a habit

Chairman elect of the board, William E. Stone, left, chats with Congressman Harold D. Cooley, Russell W. Hunt and Robert M. Koch

Burt F. Taylor, Cowan Stone Co., Inc.; D. H. Henderson, Canada Crushed and Cut Stone Ltd.; and Robert M. Patton got together during the meeting for a talk

NALI meeting

continued from page 108

Left to right: Earl P. Holwadel, Ohio Gravel Co.; Roger E. Meshberger, Meshberger Stone Co.; Paul W. Seitz, May Sand and Gravel Corp. and Cletus A. Broecker, Ayrshire Collieries Corp.

opportunity to visit with individual manufacturer's representatives, for the purpose of discussing individual problems.

The membership is not sitting back to rest on its laurels or to depend entirely on the possible passage of legislation to support limestone sales.

One entire afternoon was given to the important discussion of promotion schemes and methods that have worked for individual members of the industry. The promotion panel, led by Arthur R. Alvis of Missouri, included R. O. Bemis, Ohio; Charles S. Bryan, Minnesota; E. R. Culbertson, Georgia; and Jack Pearce, Texas.

Promotional material prepared by NALI is being used effectively, but individuals also are using these methods as representative of those that increased sales: (1) use advertising mats, and split cost with dealers; (2) print own soil-test bags and give to dealers; (3) use colored slides to show techniques of liming; (4) correspond with bankers, showing that ag-lime is a good investment; (5) use Christmas and New Years greeting cards with novel and appropriate greeting; (6) newsletters, news stories and brochures; (7) a lime calculator that shows the effectiveness of lime in getting values from fertilizers and also shows the quantities to use on soils of various descriptions. The latter item has been used with great success by Mr. Bryan, who indicated that he ran out of lime this past spring for the first time in 17 years. The calculator was described in the April 1957 issue of ROCK PRODUCTS.

A group discussion of ACP, assigned an entire afternoon, was productive of a good exchange of information on effective methods used and needed in each production district. Many of the old prob-

Please turn to page 130

Enter 1469 on Reader Card

Shovel clean-up is only one of many jobs Tournatractor handles at Festus, Mo. for Aubuchon Silica Mining Division of Portage-Manley Sand Co. Working in extremely abrasive sand, and across uneven hard rock floors, has been no problem and maintenance costs have been very low.

How Aubuchon keeps ahead of tight production schedules

despite sand "sharp as grinding compound"

Pit shovel, to wash plant, to rail car — in an hour. That's a normal scheduling at Aubuchon Silica Mining Division, Festus, Mo. Owned by Portage-Manley Sand & Gravel Co., Rockton, Ill., the firm ships many carloads a week of fine silica used in foundry cores and crystal glass.

Aubuchon does no stockpiling, depends on steady production to fill orders. Extended downtime on any machine, therefore, could halt shipments. One of the major availability problems is that of the pit tractor. Servicing the stripping and clean-up operations over the entire pit and plant area, this machine must continuously cross rough, rocky areas... working in silica so fine and hard it's been described as "sharp as grinding compound".

"Tournatractor® only machine that can do our tractor work..."

Since 1952, Aubuchon Silica Mining's tractor jobs have been handled by a rubber-tired LeTourneau-Westinghouse Tournatractor. As Plant Manager Ira Kent says: "The abrasion, rough going, and back-and-forth travel is too rough for crawlers. Tournatractor is the *only* machine we've seen that can do our tractor work."

Tournatractor's main assignments at this pit are stripping overburden to expose new sandstone, and cleaning up around shovels. But its rubber-tired mounting, sealed anti-friction drive, speed and "go-anywhere" ability let it take on a full circuit of haul-road building and maintenance, stripping, shovel and general clean-up dozing at the pit, mill, and yards.

Maintenance now no problem

How has Tournatractor stood up under conditions so tough? Let Manager Kent tell it: "The last crawler we had was junk inside of 11 months. We've worked Tournatractor 45 hours a week for almost 5 years, *with no real trouble*. On our rough hard rock floors and with free silica sand all over, that's something!

"Our one and only major repair expense in all that time has been replacement of the torque-converter oil-seal and bearings. We've never done anything to the engine... never broke an axle, chipped a gear, or had a single major thing go wrong!"

Ask for a demonstration

Tournatractor has minimized maintenance problems for Aubuchon Silica Mining, while doing a lot of work quickly, efficiently. Investigate now what it can do at *your* pit. Let us send you full facts and arrange for an on-the-job demonstration. No obligation!

Tournatractor has plenty of power to doze rocks too big for pit shovel. Big, rubber-tired machine also cleans up fast to let drilling crew set next charges earlier.

Stripping overburden, Tournatractor slot-dozes — using walls of slot as "natural sideboards". Method keeps dirt from spilling off edge of blade for bigger loads with same effort. "Fill-in" jobs like this keep Tournatractor busy the year 'round.

CT-1500-Q-1

LeTOURNEAU-WESTINGHOUSE COMPANY, PEORIA, ILLINOIS

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Left to right: Herschel Newsom, Master, National Grange; M. B. Christensen, Bureau of Public Roads; Major General Louis W. Prentiss, ARBA executive vice president; J. B. Mount, Maymead Lime Company, NCLI president; James L. Shotwell, Bureau of Public Roads

President-elect Paul W. Seitz

Left to right: Robert M. Koch, NCLI executive vice president; Paul W. Seitz, May Sand and Gravel Corp., president-elect; Congressman Frank M. Clark, Pa.; J. B. Mount, Maymead Lime Company, president, NCLI; Congressman Fred Schwengel, Iowa; L. R. Falk, L. R. Falk Construction Company

Spotlight road program at NCLI meeting

THE FEDERAL HIGHWAY program made up the single major subject under discussion at the Third Annual Convention of the National Crushed Limestone Institute. The convention was held immediately following the National Agricultural Limestone Institute in Washington, D.C., on January 24, 1958.

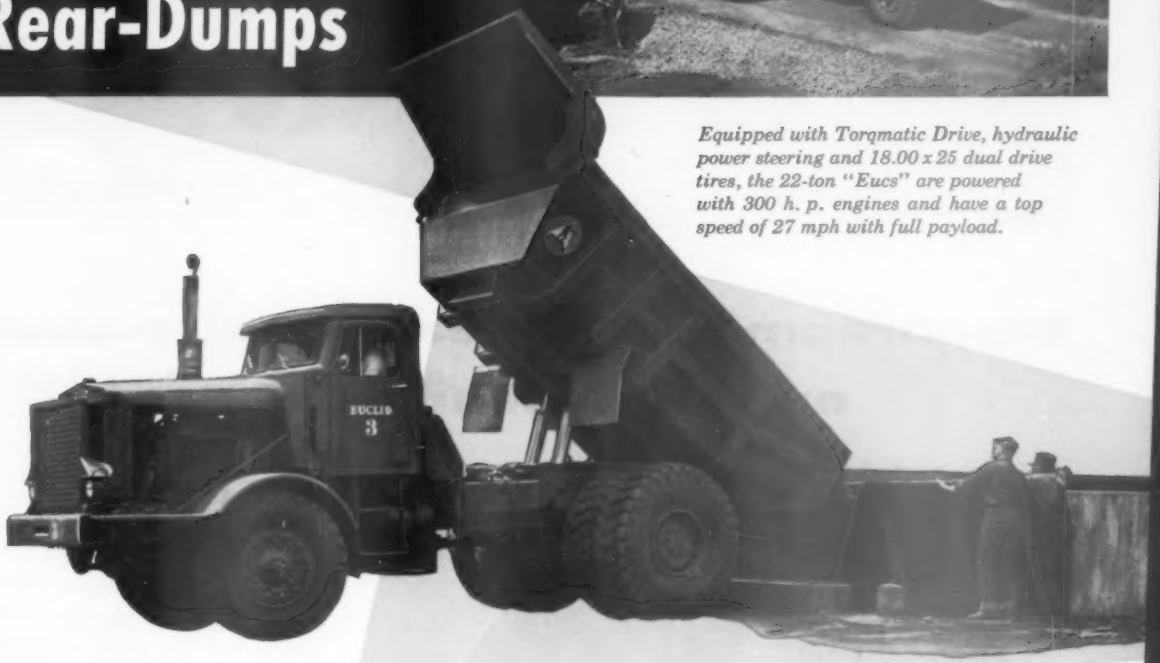
The major message to the group was brought by Herschel Newsom, Master of the National Grange, who has been a proponent of the new highway program from the beginning. Apparently, he feels that the program has undergone much change since its original conception and indeed is different now than originally passed by Congress. He warned that, in view of changes, additions and other road blocks that have reared their ugly heads in the path of the program's progress, we must continue to work together to see that the original plan be carried out, to see that funds are not depleted and that additions are limited. "Look hard at the financial plans of the Highway Act Trust Fund," he cautioned, "and don't deplete it year by year."

Two new sound-color films, both excellent in their portrayal, are the latest contribution to the dissemination of information on the highway program by the American Road Builders Association. Maj. Gen. Louis W. Prentiss, ARBA's executive vice president, showed both films to the group and expressed the hope that these films will help to remove some obstacles that still lie ahead for the program. The first film, which NCLI helped to finance, is designed to attack one of the program problems that was recognized in 1956: shortage of engineers. The second film does a masterful job of taking care of another problem also learned in the early stages of the program: public objection or possible rejection of the limited access system. These films are available through the ARBA. It is suggested that either or both may be shown, through arrangements with ARBA, to any group in the country that has either of the above-mentioned problems.

Definite proof is available that limited access roads are more safe than nonlimited access roads, according to James L. Shotwell who represented Administrator Bertram Tallamy of the U. S. Bureau of Public Roads. Safety costs are only $19,000

Please turn to page 135

87% Availability with "Euc" Rear-Dumps



Equipped with Torqmatic Drive, hydraulic power steering and 18.00 x 25 dual drive tires, the 22-ton "Eucs" are powered with 300 h. p. engines and have a top speed of 27 mph with full payload.

Five Euclids haul 2500 tons of rock daily for Dragon Cement Co.

Steady production is maintained at Dragon Cement Company in Northampton, Pennsylvania with a haulage fleet of six 22-ton Rear-Dump Euclids. Simple, rugged construction and a thorough preventive maintenance program have enabled these reliable haulers to post an 87% availability record. Depending on production requirements, four or five of the "Eucs" work an average of 6 hours per day each, with either one or two held for standby service.

Assistant Plant Manager F. J. Anderson reports that the Euclids are loaded by two 2½ yd. shovels and haul an average of 2500 tons of cement rock daily to the dumping spot over a mile away. Loads are dumped into the 35-ton hopper in 30-45 seconds. Total time for the 2¼ mile trip from loading shovel to hopper and return averages 11 minutes.

The dependable performance of "Eucs"—job-proved on hundreds of mine, quarry and industrial operations—results in more work done at lower cost per ton. Your nearby Euclid dealer will be glad to provide you with facts and figures on the complete line of Euclid earthmoving equipment... and show you why ***Euclids are your best investment.***

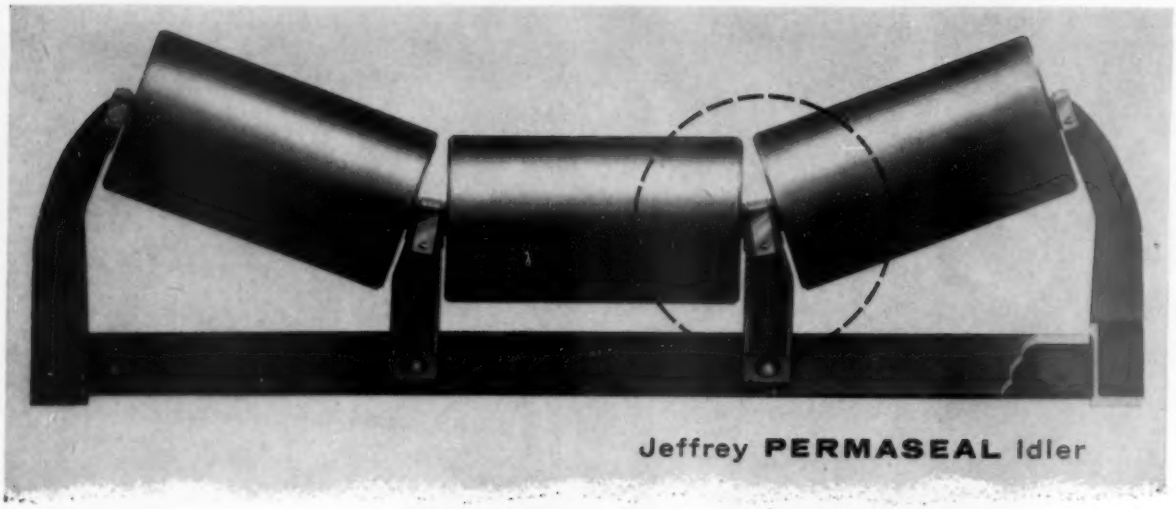
•

EUCLID DIVISION GENERAL MOTORS CORPORATION, Cleveland 17, Ohio

Euclid Equipment

FOR MOVING EARTH, ROCK, COAL AND ORE

EUCLID



Jeffrey **PERMASEAL** Idler

Diaphragm double seal for extra-severe, extra-satisfying service

Jeffrey Permaseal belt idlers give you extra-long service with an absolute minimum of maintenance. You can see why. The diaphragm double seals protect both ends of every roller. Grease can't get out; dirt can't get in.

And the positive seal means you can add grease to either side of a Jeffrey Permaseal idler without danger that grease might escape from the other side onto the conveyor belt. No grease pipes are needed.

Greater dependability and longer life offset slightly higher initial cost.

Complete facts on the extras you get from Jeffrey are available in Catalog 909. Write The Jeffrey Manufacturing Company 935 North Fourth Street, Columbus 16, Ohio.

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Enter 1404 on Reader Card

L. E. Pfeiffenberger

B. K. Powers

R. C. Johnson analyzed the effectiveness of impact crushing

Expanded aggregate men delve into—

Sintering machine research and efficiency

A SMALL BUT VERY IMPORTANT segment of the rock products industry had a two-day convention in Chicago February 14 and 15. This is The Expanded Clay and Shale Association, a group of nine major producers of lightweight aggregates, who met at the Conrad Hilton.

Twenty-five persons representing members and manufacturers informally discussed manufacturing and application problems during the two days of sessions under the leadership of T. R. Berger, executive secretary and Lucius Pfeiffenberger, technical director of the association.

A report on results of the Association-sponsored investigation of sintering machine efficiency was presented by Mr. Pfeiffenberger. His preliminary findings indicate that an increase in the depth of material at the edges of the grate prevents loss of air at the edges and improves sintering efficiency. A lively discussion by producers brought out several practical ideas for controlling air-leakage in sintering machines.

Ronald G. Hardy of Onondaga Brick Company spoke on his company's continuing research into every phase of pelletizing, sintering machine operation and lightweight aggregate production. While the investigation has yielded increased process efficiency, the most outstanding result was the increased operator interest and labor efficiency.

A detailed report of sintering machine production problems was discussed by B. K. Powers who had sent out questionnaires to the members of the association. From a limited number of replies Mr. Powers covered the difficulties of conveying, crushing and screening raw materials and processed aggregates. Since each producer has a raw material that differs from that of all other producers, and makes a product with different characteristics, not all production problems were of the same magnitude. Yet, each producer was able to profit from the free exchange of production problems and solutions.

Since the association believes that equipment manufacturers have some of the answers to members' operating difficulties, it invited R. C. Johnson of Simplicity Engineering Co. to discuss his company's product for crushing sinter cake. This machine is called the D'centegrator, and, according to the manufacturer, it is able to make a fine product from a 5½-in. raw feed.

He explained how the machine is able to make a merchantable lightweight aggregate from raw sinter with this inertial, or centrifugal crusher. Since this method is less costly to operate than many other crushers it may have an application in other rock products industries.

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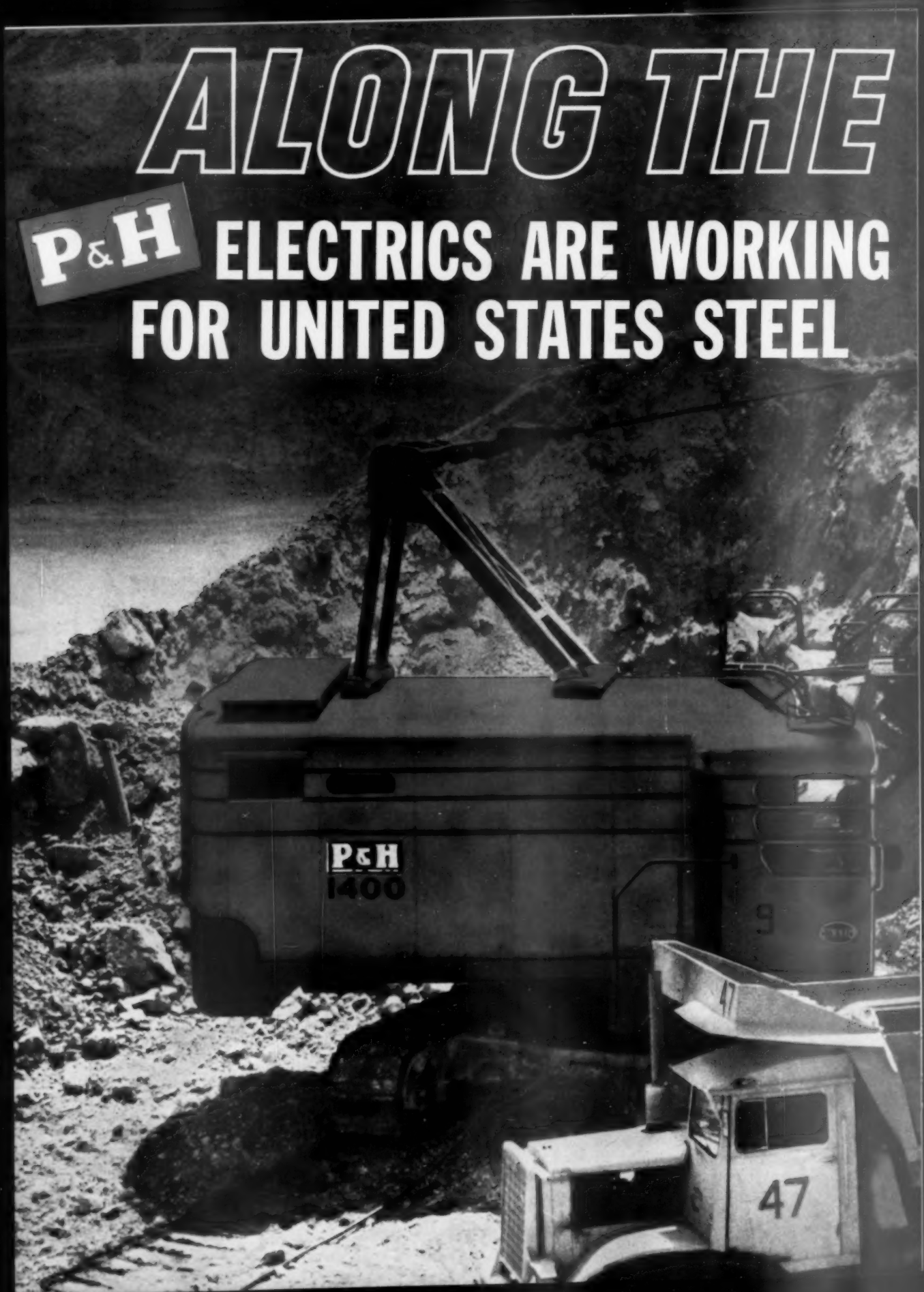
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P&H ELECTRICS ARE WORKING
FOR UNITED STATES STEEL
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1400
47

UTAH RANGE

In their iron mining operations in southern Utah, United States Steel's Columbia Iron Mining Company is using *three* P&H 1400 Electrics. You will find P&H Electrics delivering dependable production in mining operations throughout the world.

P&H performance is the result of these exclusive P&H designed and manufactured features:

MAGNETORQUE®... transmits power from the hoist motor to the dipper electro-magnetically for fast action and at the same time, eliminates shock and impact to the hoist gear train and motor. Response is immediate to varying load conditions.

ELECTRONIC CONTROLS . . . P&H designed and built to provide fast action. All motions are smooth, resulting in consistently high output.

It will pay you to choose from the complete P&H line. P&H Electric Shovels from 3½ through 10 cu. yds., P&H power shovels from ½ through 4 yds., truck cranes from 10 through 60-tons. In addition, P&H offers single source service responsibility.

HARNISCHFEGER

Construction and Mining Division
Milwaukee 46, Wisconsin

Philosophy of George Pettinos

continued from page 75

working conditions and standard of living had influenced the Pettinos' employes to reject unionization on several occasions. Although George had never been opposed to unions, he had been vocal a number of times on some of the people who ran them for their own betterment rather than that of the rank and file members. "Unions," rumbled George, "should be strictly accountable to their members—all the time."

George's feel for people was never better illustrated than in the story of Jake Gehring. Jake spent his life as a salesman for one of Pettinos' competitors. When the competitor went out of business during the depression, Jake was 76 years old and broke. George had always admired Jake, and when he heard about his plight, he offered to help by making good on the pension promises of the bankrupt firm. Jake said "no"—firmly and decisively—so George took Jake on as a salesman. He was too old to drive his own car about the city and was making his calls by public transportation—a slow, hazardous and time-consuming process. When George heard of this, he supplied a car and a chauffeur to the old man, and for more than a decade Jake called on his accounts while a liveried chauffeur waited outside with his car.

George's personal philosophy resulted not only in a very successful business but in successful living as well. Here are some of the things he lived by:

—Man should never have an idle mind. "Always have something on the anvil," he would say. He called his time at home "thought time," and many times considered it better than business time to think through decisions which had to be made at work;

—In order to succeed in business, a man must thoroughly enjoy it. George always liked his work so much that he considered it his hobby, and thought of it that way.

—A businessman should never say anything about his competitor unless it is favorable. George was always willing to help a competitor, and did—many times. He considered that whenever he helped a competitor, the industry, as a whole, was better for it and he would eventually share in this increased prosperity himself. He once paid for a plant which a competitor went broke while building—then handed the competitor the deed.

—A businessman should not play favorites capriciously. George believed in keeping Pettinos, Inc. a one-price house with a fair return on the product—and that's the way it's always been.

—George thought it highly desirable that every employe of the company own his own home. Over the years, he had taken hundreds of second and third mortgages to make it possible for his own employes to make a down payment on a house. He always felt that property owners, paying taxes directly on their own properties, were more conscious politically and therefore better citizens. He lost many thousands of dollars in unpaid second and third mortgages during lean years—but always looked on this as an investment in a better citizenry.

—He never dealt with opinions where it was possible to get facts—which was most of the time. This was a kickback to his engineering training and thinking. As a result he was sometimes slow to move, until he was sure of himself. But when he moved, he knew what he was doing.

—He never missed an opportunity to upgrade the industry in which he worked. For years, he had sent Pettinos' engineers and technicians all over the country to help foundries in trouble. Many of them he knew he could never expect business from. Yet, his technicians gained invaluable knowledge from every experience of this kind—and the whole industry benefited.

George was also always acutely conscious of the importance to him of his customer's prosperity—and there were virtually no limits to the help he would give them. On a number of occasions he counseled with customers who were losing money, checked their books and operating procedures, and subsidized them until they got back on their feet financially.

—A businessman must always be decisive—and always look forward. Although George was sometimes slow to act while he marshalled his facts, his decisions—once they were made—were sure and positive. And he never looked back from them.

George was a great believer in a highly developed political consciousness among all citizens. Although he never ran for public office, he had always been active in politics—mainly in his own community. As a Republican committeeman for many years, George would personally and objectively interview and investigate men running for office in the Republican primary. Then he would write a detailed letter to all voters in his area evaluating the men and telling who he thought best qualified for the office and why. His enthusiasm and political fervor infected his neighbors, too, and he sometimes got out as much as 90 percent of the vote in his area. Each election year was a contest with his son, George, Jr., who had a similar job in a neighboring precinct, to see which of them could turn out the highest percentage of voters.

Normally easy going, the two things George couldn't abide were repeated mistakes and liars. He was quick to forgive a mistake the first time;

Please turn to page 122

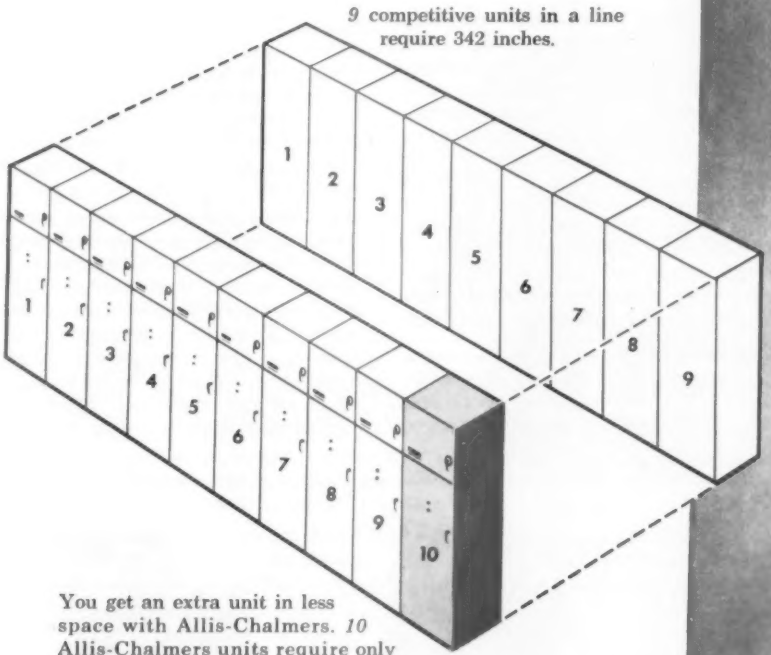
Newly designed
Type H Motor Control

Saves valuable plant space

Newly designed Allis-Chalmers high voltage control units are only 34 inches wide. This means you can put 10 Allis-Chalmers cabinets in less space than required by 9 competitive 38-inch units. In addition, the narrower width means less space required for door swing. Result: You save a total of 2.36 sq ft of floor space per unit. On 10 units, this means a saving of 23.6 sq ft.

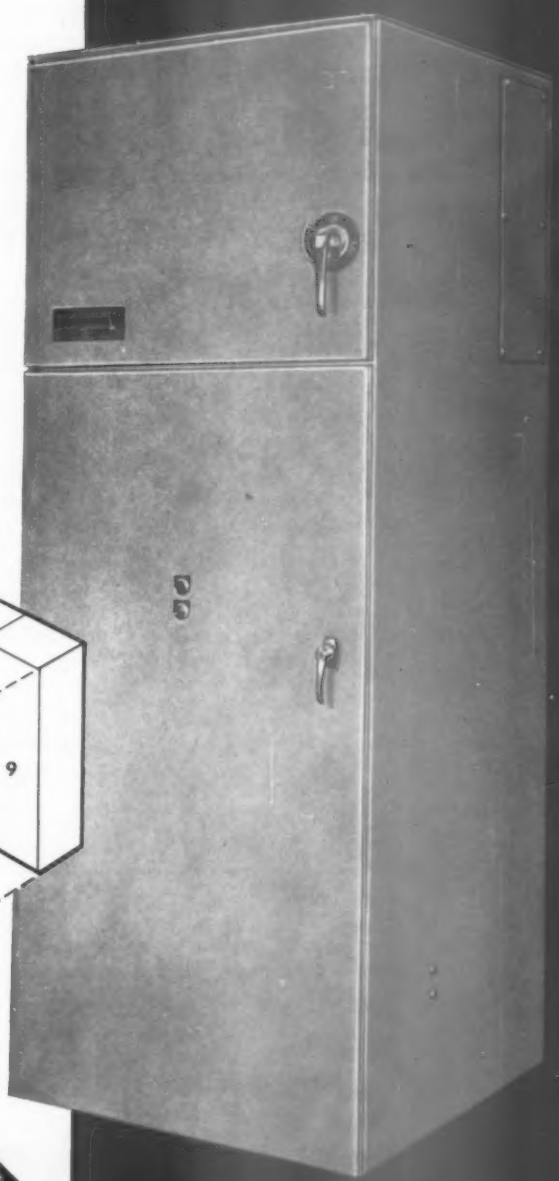
Smaller size is only one of many advantages in this new Allis-Chalmers design. You also get full-front access, more room for optional features, a completely tested unit, and the ultimate in protection for men and machines.

For more information on how this new control design can help you, call your nearest Allis-Chalmers representative, or write Allis-Chalmers, General Products Division, Milwaukee 1, Wisconsin.



9 competitive units in a line require 342 inches.

You get an extra unit in less space with Allis-Chalmers. *10* Allis-Chalmers units require only 340 inches.



ALLIS-CHALMERS

A-5518

Now! The greatest concentration built into a truck engine!

Ford's all-new Super Duty V-8's—with displacements of 401, 477 and 534 cubic inches—are designed to handle GVW's up to 51,000 lb. and GCW's up to 75,000 lb. on America's toughest runs. And their endurance has been proved, not only in dynamometer labs and on the proving grounds, but in commercial fleets from coast to coast.

You get more miles with less downtime! These all-truck engines combine an entirely new concept of engine cooling with the latest developments in mechanical design and materials, setting new Ford standards of performance and dependability in heavy-duty truck service. Here is the "how and why" of Ford's superiority:

Exclusive three-stage cooling provides fast, uniform warm-up. Coolant flow is controlled by a second thermostat that balances the rate of warm-up and expansion of block and heads. Stress concentrations and the possibility of head warpage are virtually eliminated.

High-capacity water pump, the heart of Ford's cooling system, circulates over 200 gallons per minute. High volume coolant flow, with little or no aeration, supplies vital scrubbing action at valve guides and seats. Another advantage of this unique pump—its high capacity (50% more than competitive types) is obtained with no increase in required horsepower.

Water-jacketed fuel-air intake passages, in manifold *and* heads, maintain correct and uniform fuel temperatures from carburetor to combustion chambers. This results in proper vaporization and equal distribution of fuel-air mixture to each cylinder for improved economy and maximum engine smoothness.

New "In Block" combustion chambers transfer heat concentration from heads to block for 360° chamber cooling. This transfer allows better cooling of head and valve areas, greatly increasing the life of these parts. Combustion heat absorbed by the head of the aluminum alloy piston is transferred to the long, solid piston skirt. From there it is readily dissipated through the cylinder wall into the coolant which surrounds cylinder throughout the entire length of piston travel. The result is long life pistons and rings.

Internally mounted oil cooler keeps oil at lower temperatures for better lubrication. Reduced oil temperatures maintain greater oil film strength and reduce oil carbonization. Also, cooler oil means cooler running, longer lasting rod, main and camshaft bearings.

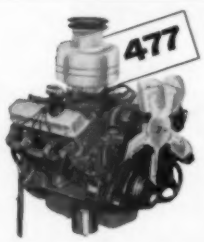
Fully machined combustion chambers mean close tolerances for accurate regulation of compression pressures. In Ford's new Super Duty V-8's, all surfaces of the combustion chamber (cylinder wall, bottom of head and top of piston) are precision-machined. Piston tops have a tapered step to maximize turbulence for improved combustion with regular grade gasoline. The smooth, straight surfaces of this wedge-shaped combustion chamber eliminate deposit-forming pockets to minimize harmful preignition.

Turbulence Top pistons have four rings and three of them, including the oil ring, are chrome-faced for long life. The top ring groove has a bonded cast-iron insert to further reduce wear. Piston tops are extra thick to withstand high compression pressures. Each piston contains thermal struts that control expansion for a precise fit, hot or cold.

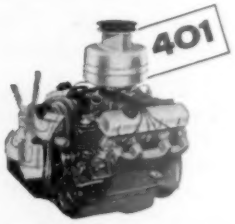
Hard-faced intake *and* exhaust valves with wear-resistant valve seat inserts are a Ford exclusive. Valves are made of heat-resistant materials and heads are dish-shaped to allow them to seat readily. To minimize the possibility of sticking, valve stems are electrolized, a surface treatment previously restricted to aircraft engines. Positive rotators provide a self-cleaning action for

NOW!
Three all-new all-truck V-8's

277-hp Short Stroke V-8 . . .
Torque: 490 lbs-ft @ 1800-2300 rpm



260-hp Short Stroke V-8 . . .
Torque: 430 lbs-ft @ 1800-2300 rpm



226-hp Short Stroke V-8 . . .
Torque: 350 lbs-ft @ 1800-2300 rpm

American Business buys more Ford Trucks than any other make!

# of endurance features ever

They're all standard in Ford's new Super Duty V-8's

more perfect seating and sealing. Any valve material requires good cooling for long life. Ford's new Super Duty engine design makes more coolant available for lower valve temperatures. This coolant flowing past Ford's integral valve guides quickly carries away valve heat. In addition, exhaust valves are sodium-filled for rapid transfer of heat from head to stem. The sodium is added by a unique process that eliminates welding, thereby strengthening the valves.

Hot testing of every Super Duty V-8 is a typical example of Ford's quality control. Each engine is run for 20 minutes to check smoothness, timing, valve lash adjustment, oil pressure, and push rod rotation.

The engine is then partially disassembled. Parts are inspected for condition and alignment. Special attention is given to bearings and other items that might cause premature failure. The engine is then reassembled and run for about 10 minutes to check timing, noise level, acceleration, smoothness and coolant, oil or compression leaks. Only Ford uses such a detailed inspection of every engine. This is done to provide you with a more dependable truck.

New submerged electric fuel pump virtually eliminates vapor lock and maintenance problems. Mounted in the bottom of the tank, it pushes solid fuel under pressure from tank to carburetor. Its electric motor is sealed in a stainless steel capsule, and operates the pump by magnetic drive.

Every engine part is a truck engine part designed and built exclusively for Ford's all-new Extra Heavy Duty trucks. The same attention to detail required for durability in the major components has been carried over to all other parts as well. Listed below are but a few typical examples:

Stainless steel gaskets at heads and exhaust manifolds practically eliminate tie-ups due to blown gaskets.

No external oil lines to break. Oil filter and air compressor are mounted directly to block.

Valve stem seals are of same material developed for use in government missile program.

Rotor-type oil pump maintains high output, virtually unaffected by normal wear from extended operation.

Dual exhaust system provides far easier breathing and higher volumetric efficiency.

Alternator system replaces generator for longer electrical life.

Biggest Ford trucks ever built! Ten new series—Tilt Cabs, Conventionals, Tandems—up to 51,000-lb. GVW, 75,000-lb. GCW. For complete information see your local Authorized Ford Dealer.

Big truck built... big truck powered... at Ford's low prices!

FORD TRUCKS COST LESS

LESS TO OWN . . . LESS TO RUN . . . LAST LONGER, TOO!

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Philosophy of George Pettinos

continued from page 118

but not the second. He was also willing to let people try ideas about which he was doubtful—providing they could show him that they had thought the thing through and it would produce beneficial results for the company if successful. In such cases he would shake his head and say: "I think it's wrong but go ahead and try it." And his judgment usually turned out to be correct.

He couldn't tolerate stuffed shirts, and dropped his membership in the Union League Club because he felt it was too thickly populated with this breed. In his whole business life spanning almost a century, he took only two vacations—and they were forced on him. He insisted that his business was his pleasure and it gave him no lift to be away from it. Music was always an important outlet to him—from his undergraduate violin-playing days right up to his 95th year. He owned a tremendously valuable collection of musical instruments including a genuine Stradivarius violin.

Only in this last year had age exerted any appreciable restraining hand on George Pettinos. Until he was 95 last summer, his rugged endurance was astounding.

"When he was 70," recalls his son, George Jr., executive vice president of Pettinos, Inc., "I would have been afraid to put on boxing gloves with him."

A few years later, an eye operation barely saved the sight in one eye, yet he had been able to read blueprints with the limited sight left in his good eye.

When he was 84, he was operated on for ulcers of the stomach. Just three days later he was back on his feet, chafing to get to work.

In his late 80's, George was called by the Bethlehem Steel Company and asked about some missing drawings that had been made in 1891. More than 50 years later, he remembered the drawings perfectly and brought up their correct file number from the depths of his prodigious memory.

George stopped coming to the office daily in June, 1954—when he was 92 years old. Since then, he had been holding court from his home in a Philadelphia suburb—and few things relating to the business had escaped his attention. Whenever he suspected things were going on without his knowledge, he was likely to phone the office and invite one of his employes out to the house and bring him up-to-date.

Until a few weeks ago, he wrote voluminous letters which he would dictate to one of the office secretaries at his home. George Jr. and the firm's accountant called regularly to keep Mr. Pettinos, Sr., posted on developments. The accountant recently called on him to advise that he sell some Pennsylvania Turnpike bonds that were declining as a result of the new federal highway program. Before he could get the words out, George Sr. told him to sell the bonds. He had already figured all the tax ramifications involved.

His personal habits had reflected one of his basic philosophies—try everything, but do it in moderation. He had always smoked cigars and a pipe in moderation. He didn't believe in cigarettes because he considered the paper harmful. He refused to take sleeping pills because he felt they were likely to be habit forming.

George Pettinos liked to tell people: "We're in the real estate business, only we sell ours by the ton instead of the acre."

Whatever the yardstick applied, his contributions to his industry, his community, and his country have been sizeable. The rock products industries can be proud of a representative like George Pettinos; they can profit well by looking to his example in the years ahead.

END

Flintkote gypsum company

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showing a defect is rejected and is automatically pushed off the end of the roller conveyor.

Wet board is introduced into the 4-zone, 8-deck gas-fired board dryer with an automatic loading device to place the board on successive decks. After about two hours' drying the board is discharged to a series of pinch rolls and breaker rolls and sent to end trim saws. End trimming is necessary only to produce a square, machine-finished end for greater ease in installation. Trimming improves the quality of the board since it has been determined that the extreme end of each board differs slightly from the characteristics of the rest of the board. After trimming each board is gauged and inspected before it is palleted and sent to storage before shipment to job site.

Four major products will be made at the new Sweetwater plant. Gypsum wallboard, lath, sheathing and a complete line of plasters. Shipment to the great southwestern market will be made by truck or by rail, for the warehouse can load eight box cars under roof.

END

Amsco pump application file —Portland, Oregon

"Amsco HC-250 pump liners outlast any we previously used by 3 to 1..."

Says Mr. Arthur A. Riedel, Jr., President and General Manager of the Willamette Tug and Barge Co., Portland, Oregon, which engages in all types of marine construction including suction dredging, bucket dredging, bridge, dock and levee construction, towing, barging, and the processing of sand, gravel and ready-mixed concrete.

"We'd get about two weeks life out of our old suction liners. With the abrasion resistance of Amsco HC-250 we get at least six weeks.

"We are presently channel-dredging sand and gravel at Hood River, Ore. with this 16-inch Amsco. Last year we dredged 3½ million cubic yards. A pump shell lasts about 600,000 yards before we rebuild it (by welding). The bearings stand up a year and a half.

"The pump is three years old. It has a GM diesel drive, flexible coupling. Our dredge has both plain suction and a rotary cutter. The lift varies up to 30 feet, the longest pipeline the pump has been on was 6200 feet.

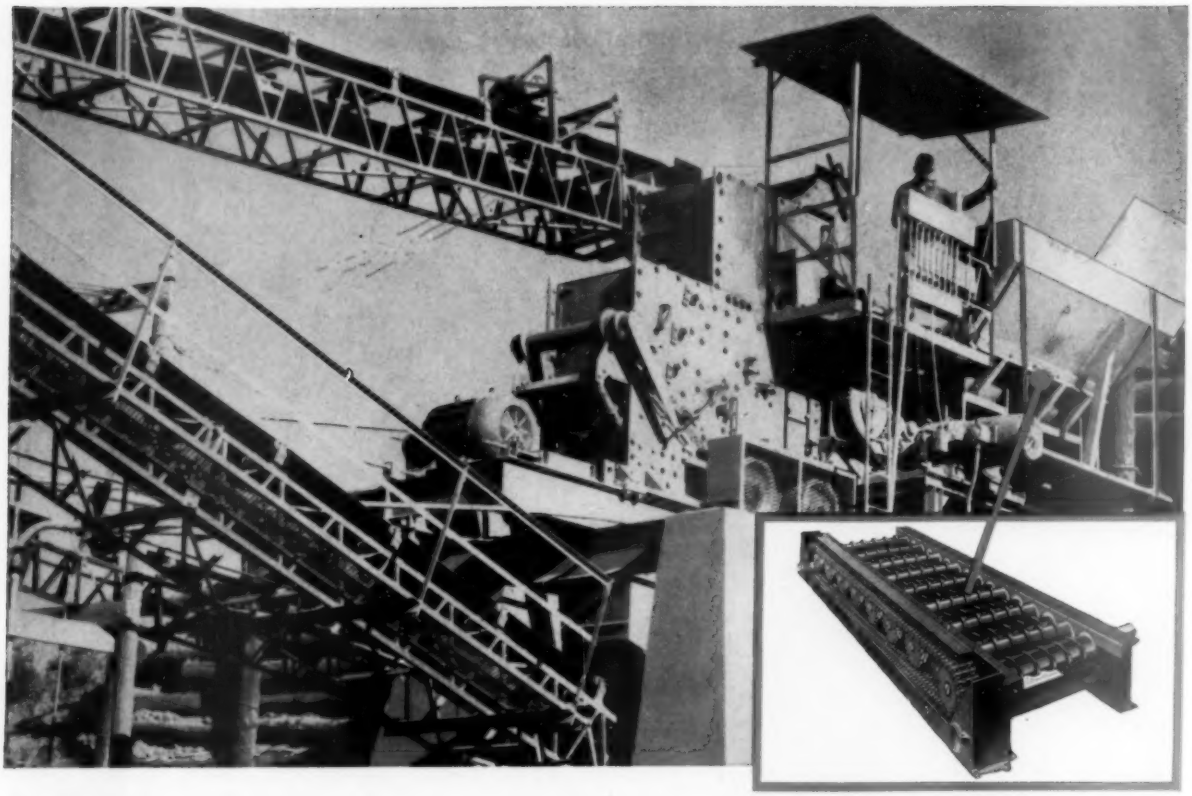
"We're happy with this pump, but what we like best is the service, the fast parts delivery Amsco gives us. We depend on it."

Amsco® Dredge Pump standard sizes range from 6″ to 20″ discharge openings. Larger sizes are also available. An Amsco pump engineer will be glad to discuss your requirements, or write for Bulletin 1052P containing full information and specifications on the Amsco line.

AMERICAN Brake Shoe COMPANY

AMSCO American Manganese Steel Division
Chicago Heights, Illinois

Enter 1403 on Reader Card



"A Universal plant made aggregate production a profitable addition to our business."

says Ray Mast, Superintendent, Mullet Coal Company, Mount Eaton, Ohio

"For the past twelve years our company has been producing industrial coal at the Mount Eaton site. To mine the coal, we have to blast through a four-foot layer of limestone. Because of a growing demand for aggregate in this area of Ohio, we decided to expand our operation and make use of the limestone.

"In our quarrying operation, overburden is first stripped off, exposing the limestone floor above the coal. A tractor and broom sweep the surface clean for drilling and blasting. Between the limestone and coal is an intermediate layer of clay, dirt and mud. When blasted, this material mixes with the limestone to form a compound containing as much as 30% of objectionable fines. Our problem was to get rid of the fines before crushing the material to specification road stone.

"A highly satisfactory solution was found by using a Universal Wobbler Feeder ahead of our Universal Impact Master.

"Our Wobbler Feeder, a 9" pitch unit, has 16 bars composing a 36" wide bed at the bottom of the hopper. The bars, elliptical in shape and set at alternate vertical and horizontal positions, are spaced 2" apart. Ten-ton quarry loads are dumped on the feeder bed. As the bars rotate, the load is moved forward. The 2" and under material is scalped off ahead of the crusher and drops through the bar spacings. These unwanted fines are discharged to a waste pile by a reject conveyor. The oversize is fed to the Impact Master for reduction to specified size. The crusher functions as a primary and secondary by closed-circuiting with a screening tower."

This feeder-crusher combination was featured by Universal at its exhibit in Chicago during the January, 1957 Road Show. Since that time a number of these plants have been put into operation throughout the country. Mullet Coal Company is just one of these applications.

We'll be glad to tell you where they are and how they work and just what the Wobbler Feeder-Impact Master combination can do for you. Tell us the kind of material to be handled, the percentage of fines in the feed, size of fines to be removed and desired capacity in tons per hour. We'll furnish complete information at no obligation.

PETTIBONE UNIVERSAL
In Cedar Rapids Since 1906

UNIVERSAL ENGINEERING CORPORATION

617 C Avenue, N.W., Cedar Rapids, Iowa

Subsidiary of Pettibone Mulliken Corporation, 4700 W. Division Street, Chicago 51, Illinois

Enter 1511 on Reader Card

Sand and gravel meet

continued from page 96

shown in the well-attended session at which the ROCK PRODUCTS safety trophies were presented.

The safety awards were won by the Van Sciver plant of Warner Company, Philadelphia, Pa., Class A; by the Hamilton-Symmes plant of American Aggregates Corp., Greenville, Ohio, in Class B; and by the Ramsey plant of McKee Bros., Inc., Ramsey, N.J., in Class C competition.

An outstanding paper on safety was given by H. G. Feraud, executive secretary of Southern California Rock Products Association and of Southern California Ready Mixed Concrete Association.

Mr. Feraud stated " . . . one of the most important functions of a well-operated trade association is to conduct some kind of a safety program which will reduce the frequency rate of lost-time injuries." Safety campaigns are important to the producer, not only because they save him money, but because they are positive evidence to the employes that he is interested in their welfare.

The two Southern California associations, which share the same staff of operating officials, organized their safety program in this way: When Feraud and his staff assessed safety conditions before starting, they found that the lost-time injury rate was too high—nearly 1 per 32,000 man-hours worked.

Then producers' supervisors were asked to make complete reports on the injuries, including age and classification of the injured employe, his length of service, the time of day and day of week the injury occurred, how many hours of his shift had been worked before the accident. The supervisor answered questions as, "Had the employe been instructed in the safe performance of his job?" "Was the injury due to an 'unsafe act' on the part of the employe or to an 'unsafe condition' maintained by the employer?" and "What steps had been taken to prevent a recurrence of the injury?"

The association now publishes each month a "Safety Sentinel" which is posted in every plant for the employes. A safety education program stresses safe performance at all times, and keeps employes informed of the progress of the safety program.

There are a number of tangible results after 3½ years of operation. Where formerly 21 of the 27 members of the two associations reported lost-time accidents, only three companies had lost-time accidents last year. The total number of injuries was cut in half, from 212 in 1956 to 120 in 1957.

Please turn to page 126

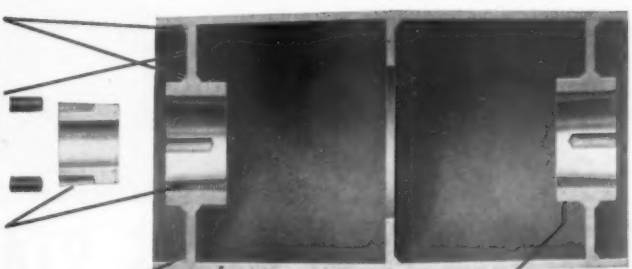
How LINK-BELT welded steel pulleys extend belt conveyor life

SUBMERGED ARC WELDS connecting rims and hubs to end discs are as strong as joined members.

END DISCS are machined for true concentricity. Welds provide fully enclosed assembly.

TAPER LOCK BUSHINGS assure full-compression grip — even on inaccurately finished shafts.

MINIMUM RIM OVERHANG prevents dirt buildup. Smooth pulley surfaces protect belt.



PURE RUBBER LAGGING is vulcanized to pulley for life. Choice of plain or herringbone.

MINIMUM OVERHUNG LOAD is assured. Bearings can be positioned close to hubs.

Taper lock bushings speed installation

Longer conveyor belt life depends on smooth-rolling, smooth-surface pulleys. Link-Belt welded steel pulleys with taper lock bushings meet these exacting requirements — drive the belt without slip, in a straight path with regulated tension. In addition, taper lock bushings simplify mounting.

Diameters: 6 to 60 in.; faces: 12 to 66 in.; for 15/16 to 10-in. shafts. See your Link-Belt factory branch store or authorized stock-carrying distributors.

EASY ON ← → **EASY OFF**

Insert bushing in hub, align holes and keyseat, slide shaft into place.

Insert and tighten screws in holes which are threaded in hub half.

LINK-BELT

WELDED STEEL CONVEYOR PULLEYS

LINK-BELT COMPANY: Executive Offices, Prudential Plaza, Chicago 1. To Serve Industry There Are Link-Belt Plants, Sales Offices, Stock Carrying Factory Branch Stores and Distributors in All Principal Cities. Export Office, New York 7; Canada, Scarboro (Toronto 13); Australia, Marrickville, N.S.W.; South Africa, Springs. Representatives Throughout the World. 14,283

Remove screws, screw one into half-thread hole in bushing.

With bushing released, shaft can easily be slipped off pulley.

Enter 1420 on Reader Card

Sand and gravel meet

continued from page 125

Group insurance. The conference on the joint insurance plan and the retirement plan was presided over by William Moore. Kenneth E. Tobin, Jr., associate executive secretary of both Associations, reviewed the plan and reported on the progress made in enlisting member companies into the insurance-retirement plans. Results to date have been quite gratifying.

It was indicated that a premium for 1957 was to be given to those insured under the plan and the premium was in the 17 percent range. It will be issued as part payment for 1958. In other words, the premium will be in the form of some free insurance. Mr. Tobin also pointed out that this was noteworthy, for many other insurance and medical plans had to raise their rates from 10 to 60 percent.

Jermain B. Porter, John Hancock Mutual Life Insurance Co., Boston, Mass., gave an outline of the two plans with emphasis on the increased benefit schedules. Coverage includes life insurance and accidental death-dismemberment insurance of employes in two age brackets: those below 65 years of age and those above. There are three classifications for all ages and these are (a) for active officers, partners and individual proprietors, (b) department heads, superintendents, foremen, salesmen, managers and salaried supervisory personnel and (c) all other employes. The maximum is $10,000 per individual. The major medical benefits included hospitalization, surgical expense and medical benefits that appear to be very generous. The cost ranges from a high of $17.65 to a low $6.14 per month, depending on age and other considerations with no premedical examination required.

Donald Shepherd, Quincy, Mass., plan consultant for the joint associations, next spoke on the retirement program for officers and employes of active and associate member companies. Donald Shepherd & Co. have trained plan consultants in cities strategically located across the United States and will design a retirement program for member companies. At the speaker's table were the members of Mr. Shepherd's staff and several plan consultants who spoke briefly to outline "New Concepts in Retirement Planning."

It was apparent that a retirement plan geared to any individual company's needs, regardless of the size of the company could be more efficiently prepared by taking advantage of the consulting services available.

Earle T. Spear, vice president, Boston Safe De-

Please turn to page 128

when the stone comes tumbling down...

HENDRICK PERFORATED PLATE STANDS UP!

Hendrick H Quality Steel Plate stands up under the toughest, heavy-duty screening of crushed stone. It's made from high carbon or stainless steels. High carbon can be heat-treated after perforation for longer life. It screens faster and easier, while full openings eliminate blinding. Product uniformity is assured throughout the life of the screen. Deck changes are quick, for lowered labor costs.

Hendrick H Quality Steel Perforated Plate is available either flat, corrugated or stepped, in any desired shape, and with perforations of any size.

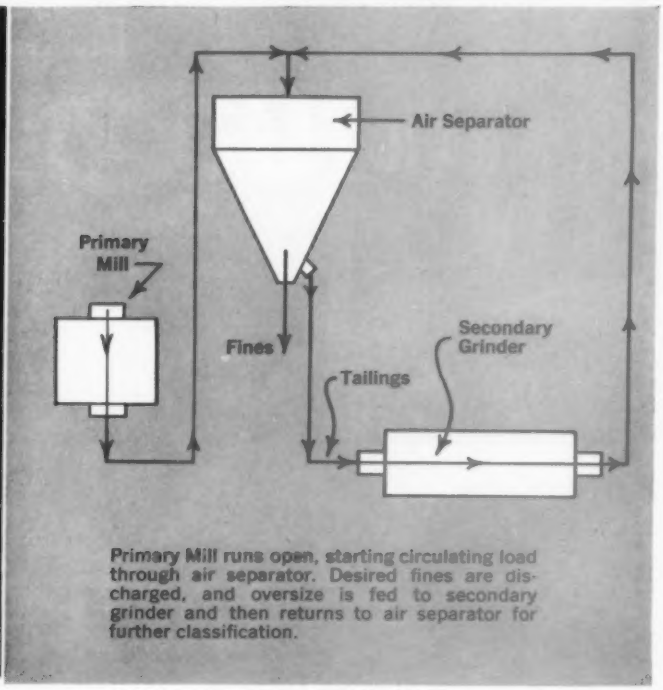
HENDRICK MANUFACTURING COMPANY
47 Dundaff Street Carbondale, Pa.

Perforated Metal • Perforated Metal Screens • Wedge-Slot Screens • Hendrick Wedge Wire Screens • Architectural Grilles • Mitco Pan Steel Flooring • Shur-Site Treads • Armorgrids • Hydro Dehazers • Distillation Column Internals

Enter 1476 on Reader Card

Stop Overworking Grinding Mills

FEED SPOUT
Sturtevant Air Separators come in 9 models, diameters range from 3 to 18 ft.
TAILINGS DISCHARGE
FINES DISCHARGE



Primary Mill runs open, starting circulating load through air separator. Desired fines are discharged, and oversize is fed to secondary grinder and then returns to air separator for further classification.

LET STURTEVANT AIR SEPARATION HELP YOUR SYSTEM PRODUCE UP TO 300% MORE 40 TO 400 MESH FINES — CUT POWER COSTS AS MUCH AS 50%

Fines that pass through grinding mills unhindered, serving only to increase the work load, can be quickly classified by a Sturtevant Air Separator operating in closed circuit. With all oversize automatically returned for further grinding, the result is production capacity impossible to achieve in single-pass grinding — as well as a better, more uniform product.

Closed circuit grinding and air separation is of proved advantage in *all* secondary reduction processes. Grinding mills are free to perform at top efficiency, their output frequently increased as much as 300% and power costs cut up to 50% (documented by 30 years of Sturtevant air separation experience in the cement industry). Further, attritional heat is dissipated by greater surface exposure.

Sturtevant Air Separators Keep Grinding Units At Peak Efficiency — Classify Feed Loads to 800 Tons Per Hour

Sturtevant Air Separators circulate production loads with exact control of air currents and centrifugal force. Simple adjustments make possible counter-action between the two to the point where a product of almost any desired fineness may be collected while coarser sizes are rejected.

A 16 ft. Sturtevant, for example, took a feed rate of 800 tph, containing only a small percentage of desired fines, and delivered 30 tph 90% 200 mesh, recirculating the oversize through the grinding circuit. (In the cement industry, Sturtevant units deliver up to 60 tph raw cement fines, 40 tph finished cement fines.)

Sturtevant's ability to engineer precise, high capacity classification for closed circuit grinding systems is the result of long experience with a wide variety of dry processes. Sturtevant designed its first air separator some 40 years ago — and has been pioneering developments in centrifugal classification ever since.

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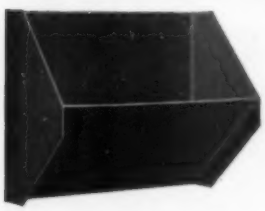

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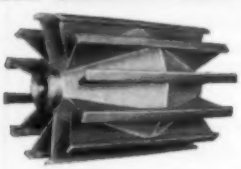

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Sand and gravel meet

continued from page 126

posit and Trust Co., spoke briefly on the role of his company who are the trustees for the plans. The insurance company for the retirement phase is the Massachusetts Mutual Life Insurance Co., Springfield, Mass. The insurance and medical phase is underwritten by the John Hancock Mutual Life Insurance Co., Boston, Mass.

Election of officers. The entire slate of officers and directors offered by the nominating committee by John W. Murphy, chairman, was elected at the morning session on February 12.

New president of the National Sand and Gravel Association is E. Phil Gemmer of Houston, Texas. His election culminates many years of active service in association affairs. Mr. Gemmer is president of Texas Construction Materials Company, one of the largest and most diversified sand and gravel producers in Texas.

Elected vice president of the Association is E. K. Davison of J. K. Davison & Bros., large Pittsburgh producer of aggregates and ready mix. Mr. Davison has been secretary-treasurer of the Association for the past biennium and chairman of the Committee on Public Relations.

Newly elected secretary-treasurer is Fred P. Curtis of Lyman Richey Sand and Gravel Co., Omaha, who with the other officers will serve until the end of the convention in 1960.

Five directors were elected to replace those whose terms ended this year. The new directors are: Irving Warner, Jr. of Philadelphia; Henry H. Kirwin of Utica, New York; C. A. Barinowski, Birmingham, Ala.; Edmund F. Brovelli, Napa, California and Al H. Smith.

In his final report to the membership, Mr. Weaver reflected that the Association had started in the old Auditorium Hotel in Chicago, only a few blocks from the Hilton. There were about 50 men at that first meeting in December 1911. Now, with an attendance of over 7,000 at this convention, it is an indication of the strength and success of the Association.

That first meeting in Chicago was called by Edgar H. Defebaugh, editor of ROCK PRODUCTS, in response to a need of the more than 700 sand and gravel producers in the country at that time for a national organization. At the top of the agenda for that meeting was the question of increased rail rates for hauling aggregates—still a lively issue.

At a meeting of the Board of Directors on Feb-

Please turn to page 130

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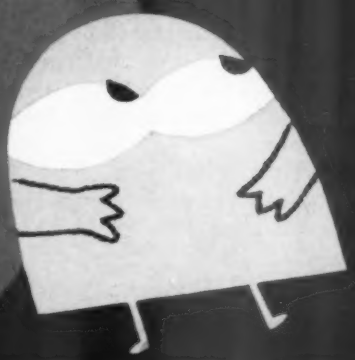

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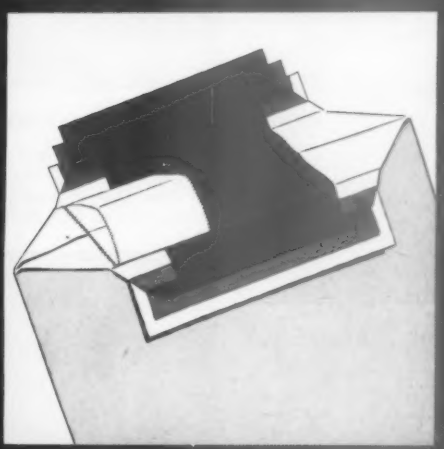

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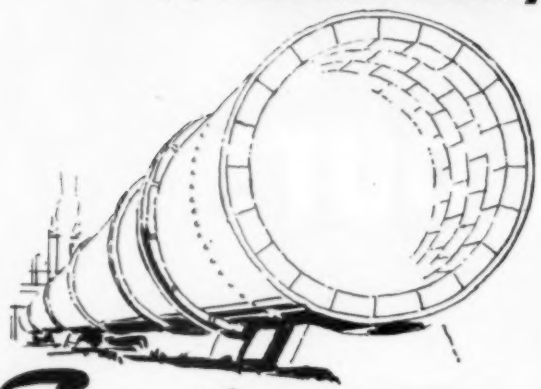

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Sand and gravel meet

continued from page 128

ruary 11, board members who were elected to the Executive Committee were Harold E. Bender, C. G. Cooley, Joseph L. Shiely, Jr., and Al H. Smith. The 1958 semi-annual meeting of the Board of Directors will be held at the Tropicana Hotel, Las Vegas on September 30 through October 2. The National Sand and Gravel Association's next annual meeting will be held in New Orleans, February 15 through 19, 1959.

The Manufacturers Division of the Association met on February 8 and chose J. Craig McLanahan as chairman for a one-year term. Vice chairmen in order of seniority are W. A. Rundquist, E. D. Stearns, Roy K. Wills and Emil Deister, Jr. A change in the by-laws was passed to make the immediate past chairman, the chairman and the senior vice chairman Manufacturers Division representatives in the activities of the Association's Board of Directors.

C. B. Laird, retiring chairman of the Manufacturers Division, received an award from the Division for his outstanding work during the past two years.

END

NALI meeting

continued from page 110

lems still exist in many areas: difficulty with soil test samples and soil testing, and problems concerning the effect of increasing the payment rates in various areas. Much discussion was pointed toward the problem of an apparent increase in funds going into or toward "permanent" as compared with "recurring" practices. There is some feeling that the ACP administration is pushing the former, with a net undesirable effect on use of agricultural limestone.

The business program was effectively interspersed with appropriate colored movies and outside speakers for special luncheons and dinners. NALI's president gave his usual good report on past activities and outlined his analysis of the future for the industry at the Greeting Luncheon. In addition to discussing the feasibility of the afore-mentioned proposed legislation, Mr. Koch indicated that a bill has been introduced into the House by Congressman Stennis to allow the transfer of unused Conservation Reserve monies to the ACP. If the new legislation is not forthcoming,

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NALI meet

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passage of the Stennis bill would surely help the needed distribution of agricultural limestone.

Mr. Koch also noted that trouble is springing up in a few states. In one case (Missouri), specifications have been changed to eliminate for all practical purposes dolomite products from the agricultural limestone business. In another case, use of limestone has been predicated on the use of fertilizer. There is still trouble in various states that require the use of a soil test on which to base allocations of agricultural limestone.

Because of several conflicting annual association banquets in Washington, this year NALI held its banquet on the evening preceding the Manufacturers' Night buffet and dinner dance. The Hon. Harold D. Cooley, Congressman from North Carolina, delivered the address at the annual banquet. He proved in his talk to the group that he surely is an advocate of sound agricultural legislation and also of a sound conservation program. Win Pendleton, Washington newspaperman and radio commentator, was guest speaker at the Thursday luncheon. His topic was "Public Relations—Good and Bad."

The business meeting of the Institute reported to the general group the action taken by the Board of Directors at a meeting held the day prior to the convention. The new NALI Chairman of the Board is William E. Stone, elected unanimously to replace Russell W. Hunt. The outgoing chairman was recognized by an applause of appreciation for the splendid work that he has done for the institute this past year. W. L. Bryan of Shakopee, Minn. was elected vice chairman. The election of Robert M. Koch as president and general manager was announced, as was that of Samuel Omasta as new vice president. For the first time, the offices of secretary and treasurer were combined for the next term. J. B. Mount, who has one year more to serve as treasurer, was designated by the chairman and accepted by the Board to be the secretary-treasurer for the next year.

Members of the executive committee are as follows: Arthur R. Alvis, Alvis Limestone & Concrete Co., Butler, Mo.; Robert M. Bridges, Consumers Company, Chicago, Ill.; W. L. Bryan, Bryan Rock Products, Inc., Shakopee, Minn.; William J. Clark, Munnsville Limestone Corporation, Munnsville, N.Y.; L. R. Falk, L. R. Falk Construction Co., St. Ansgar, Iowa; Russell W. Hunt, Southwest Lime Company, Neosho, Mo.; J. B. Mount, Maymead Lime Company, Shouns, Tenn.;

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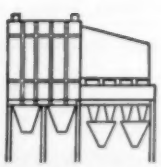

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NALI meet

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Arnold W. Mulzer, Mulzer Brothers, Tell City, Ind.; Powell G. Potts, Southern Stone Company, Inc., Franklin, Ky.; E. B. Snead, Texas Crushed Stone Co., Inc., Austin, Texas; William E. Stone, Armco Steel Corp., Piqua Quarries, Piqua, Ohio.

Work of NALI is expanding, and this past year the offices were moved and expanded to take care of the increasing work. The staff has been enlarged to provide more efficient handling of the problems and the work. Consensus of the group was that more work should be done at the state level to better implement NALI's program, and the expansion in office and staff is designed to allow more work in that direction.

The group will hold its midyear meeting at the Sheraton-Blackstone Hotel in Chicago next June. The Convention Arrangements Committee also recommended that the time of the annual meetings be cut from four to three days and that the committee decisions be made at the midyear meeting, that the size of the convention program be reduced, and that the Manufacturers' Night be held the night before the annual banquet. These recommendations were accepted by the Board.

NCLI meeting

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per year per vehicle mile on the former, whereas those costs jump to $82,000 on main highways with no limited access. Thus, said Mr. Shotwell, "we can spend $1¼ million per mile and save the users money" by providing limited access roads.

Accomplishments, plans and prospects for the program were discussed by Mr. Shotwell. A recent report on estimate for completion cost of the program exceeds the original estimate by $10 billion. According to the speaker, here are the reasons for the increase: (1) traffic increase estimate for 1957 now is higher; (2) additional local services have been added that were not included originally; (3) general increase in construction costs. It was pointed out that the latter cost increase is not the major factor in the total $10 billion jump in the estimate.

How the highway program will affect the aggregates industry was discussed by M. B. Christensen, office of engineering, U. S. Bureau of Public Roads. He indicated that total federal and state funds to be spent on the Interstate and ABC systems over

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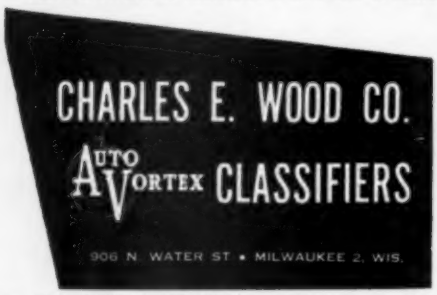

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NCLI meeting

continued from page 135

the 13-year period would be $50 billion. But, only $43.5 billion would be available for construction, since 17 percent would go for engineering and right-of-way expenditures. He was quick to point out that these figures are based on authorizations, not total eventual cost, since no one now knows just how much the program will have cost until after it is completed.

Aggregates producers will share in construction business brought on by the program, but Mr. Christensen pointed out that it is likely that contractors may produce their own aggregates on the Interstate contracts, since most of them will be large. Producers will have better opportunity to supply materials for secondary system roads.

Producers also may participate in the maintenance portion of the program, but there will be no federal funds spent for this purpose outside of Alaska. The states have the responsibility for maintenance on roads in the federal system.

Senator Francis Case delivered the main address at the annual luncheon. He spoke on "The Secondary Systems."

The business meeting of the group was held on the afternoon of the 1-day convention. NCLI now has 134 members and is larger than NALI was at the end of its second year. Future plans indicate a further growth for the Institute.

Elections resulted in the naming of Paul W. Seitz, May Sand & Gravel Co. of Fort Wayne, Indiana as NCLI president, succeeding J. B. Mount of Shouns, Tennessee. Thomas E. Lalley, Bradford Hills Quarry, Inc., E. Petersburg, Pa., was elected first vice president. For the first time, the offices of secretary and treasurer were combined. Taisto Laine of the Hanna Coal Company—treasurer last year—was elected to fill the combined office for the next year. Robert M. Koch was re-elected executive vice president.

END

Crushed stone meeting

continued from page 106

struction of highway surfaces, both concrete and bituminous. The Virginia Department of Highways is doing a lot of practical experimentation with de-slicking mixes of bituminous concrete on that state's roads and highways.

Election of officers. Oscar E. Benson of General Crushed Stone Co., Easton, Pa. was elected presi-

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Calciner

CUT LABOR COST — The Ellernan Calciner's AUTOMATIC continous operation requires a minimum of labor.

CUT FUEL COST — Recirculation of heat ordinarily lost and automatic temperature control cut fuel costs by more than 30 percent.

CUT ORIGINAL COST — The new, compact Ellernan Calciner costs LESS THAN HALF the price of ordinary calcining installations.

Ellernan Calciners treat small-size LIMESTONE, DOLOMITE, PHOSPHATE, GYPSUM, CLAY, etc. The unit preheats, calcines and cools automatically and continuously with exact temperature control. Completely flexible . . . Ellernan Calciner installations are adaptable to any size plant, to handle any capacity.

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Crushed stone meeting

continued from page 138

dent of National Crushed Stone Association to succeed N. E. Kelb of Indianapolis. Elected vice-president of the Association was Warren C. Rowe of Malden, Mass., while new secretary-treasurer will be J. Reid Callanan, South Bethlehem, New York.

The new executive committee will be composed of the immediate past president, Mr. Kelb, with H. C. Krause, Clarence Camp, Charles Coburn, G. D. Lott, Jr., R. S. Reigeluth, Nelson Severinghaus and D. L. Williams.

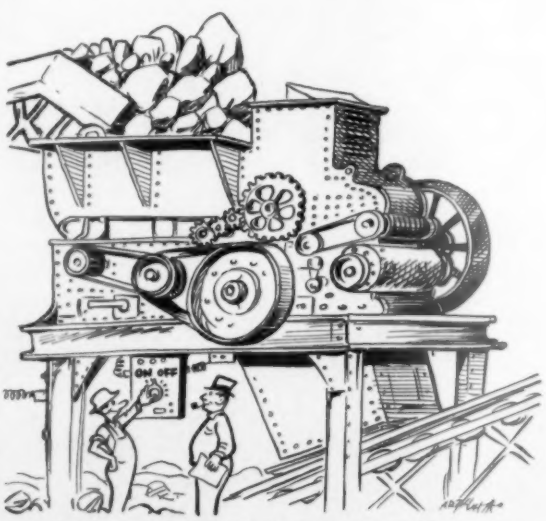
It was announced that the mid-year meeting of the board of directors would be at The Homestead, White Sulphur Springs, W. Va., July 23-25, 1958. The 1959 convention of the Association will meet at the Americana Hotel in Miami Beach starting January 25, 1959, while the 1960 convention and exposition will again be held at the Conrad Hilton Hotel in Chicago during the week of February 21.

At the same time the Manufacturers Division of the Association met and elected officers and an executive committee. Newly elected chairman is L. A. Eiben of Northern Blower Co., Minneapolis; and the new vice chairman is R. D. Kettner of General Electric Co.

Newly appointed members of the executive committee are I. F. Deister, W. E. Collins, Jr., and J. M. Hume.

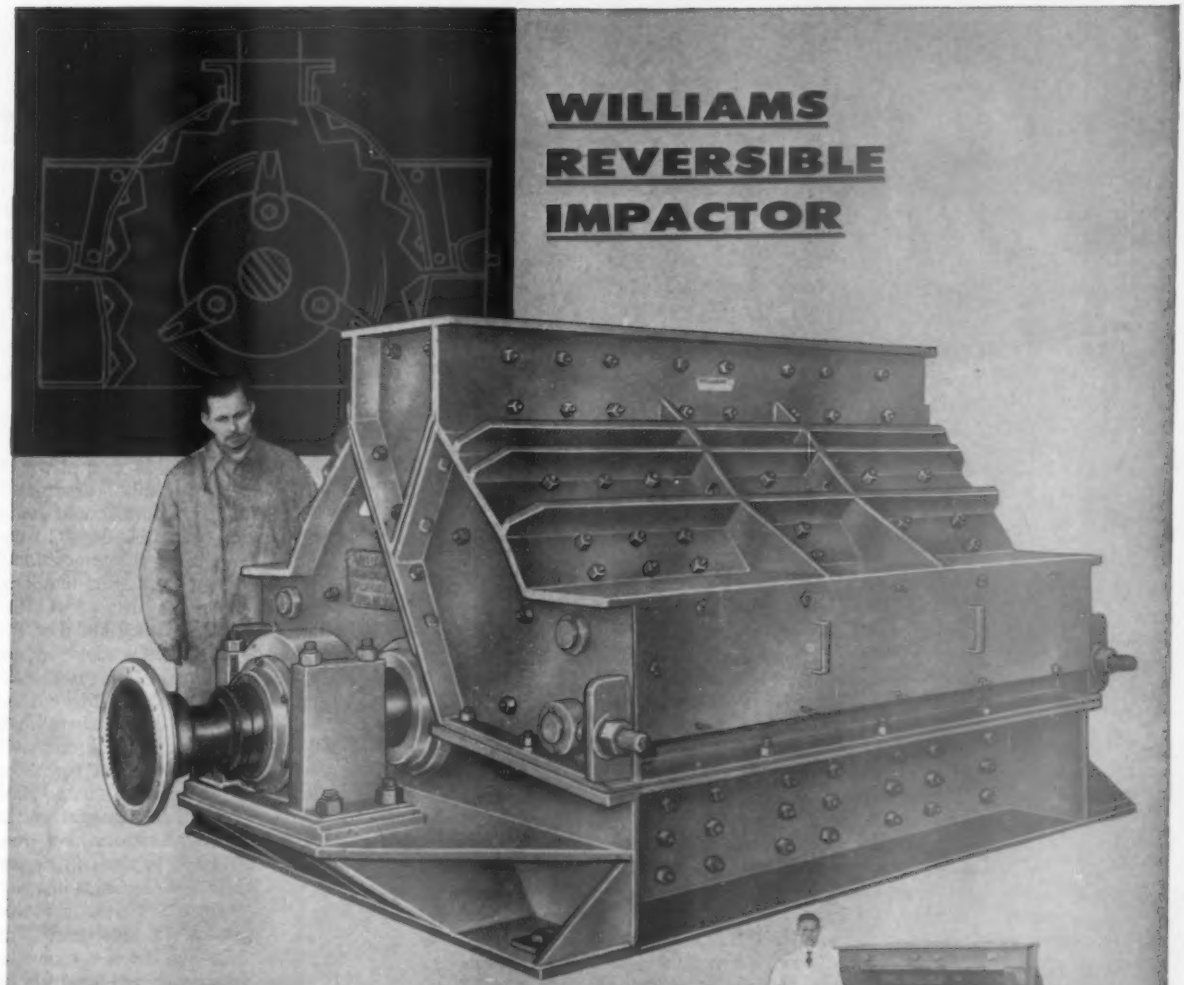
A report of the membership committee announced that 18 new members have been accepted to the Manufacturers Division, bringing the total membership to 125.

END

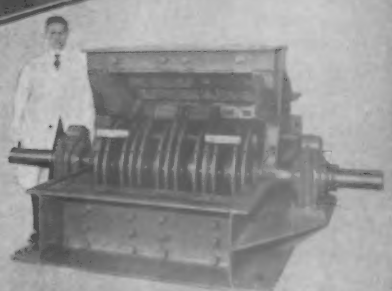


DRIP OR REGULAR GRIND, CHIEF?

WILLIAMS REVERSIBLE IMPACTOR



- 100% Impact Reduction
- No Friction Or Abrasion
- Unobstructed Discharge
- Less Upkeep Expense



Internal view showing manganese steel impact blocks, hammers and liners. Rugged, heavy steel plate construction. Extra large shafts are mounted in oversize bearings sealed in self-aligning housings.

Unequalled For Secondary Grinding

Reduces limestone and material of similar hardness to 1½", ¾" or smaller. Properly adjusted, the Williams Impactor makes excellent material with the proper percentage of fines for road base course. Unusually low upkeep expense as reduction is 100% by impact. Material is fed to enter between the hammers and is thrown against the impact blocks setting up a repeated ricochet action which accomplishes the reduction. Adjustable impact blocks adjust for wear. A reversing switch on motor permits rotating hammers in either direction, to the left today and to the right tomorrow, thereby giving double hammer life. No grates are used. Entire bottom is open permitting unobstructed discharge of crushed material and less wear and tear. A size for every job. Let us tell you about one for your use.

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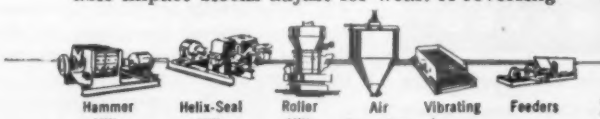

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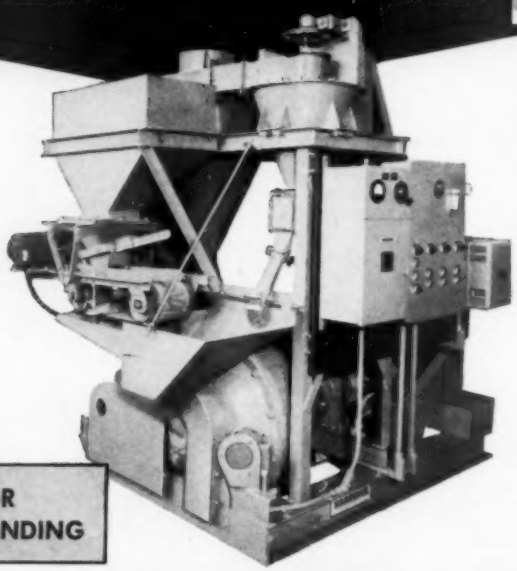
PACKAGED PULVERIZERS

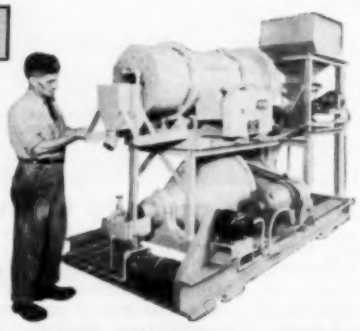


FOR DRY GRINDING

For any small-scale continuous dry grinding or pulverizing problem (such as is found in a pilot plant, laboratory or small commercial process) the Hardinge dry grinding unit is the solution. Completely self-contained and portable, this unit requires only power connections to be placed in operation. Includes Constant-Weight Feeder, "Electric Ear" grinding control, Conical Mill, "Gyrotor" Air Classifier, product collector and dust collector.

FOR WET GRINDING

Hardinge builds a similar unit (right) for small-scale wet-grinding applications. The "package" includes mill, classifier, feeder, "Electric Ear", and launders.



Bulletin AH-448-7

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ROCKY'S NOTES

(Continued from page 17)

quently, the Indian research included an extensive study of the mineralogical composition of the clay fractions through chemical and physical tests, base exchange determinations, potentiometric titrations, viscosity measurements, X-ray diffraction and electron micrography. The pozzolanic activities of the various samples calcined at different temperatures were determined by the lime reactivity test (a modified form of that used by the U. S. Bureau of Reclamation).

The first stage of their research showed: "That each soil had an optimum temperature of its own at which it exhibited its maximum pozzolanic activity. This optimum could vary from 600 deg. to 1,000 deg. C., depending on the mineral composition." After discussing the optimum temperatures for samples of various local materials, the author concludes that the fineness of the material alone is not an important factor as far as pozzolanic activity is concerned. More than fineness, the nature of the crystallinity and its exact mineralogical composition are vital factors, even for those materials whose chemical composition reveals the desired percentages of the oxides of silicon, aluminum and iron.

"Generally imperfections in crystal structure due to disorderliness in structure, high internal strains, ruptured bonds, 'vacancies' in lattice, etc., all give broad bands in the X-ray powder diagrams, indicating an 'amorphous' structure. Such a structure generally shows high reactivity and is essential for a good pozzolan. Despite grinding materials like quartz, feldspar, mullite, etc., to great fineness, their pozzolanic activity cannot be effectively increased by ordinary calcining since the above minerals have good crystallinity, and even the small increase may be due merely to rupture of the bonds caused by fine grinding.

"The first series of experiments indicated that clays are most reactive when heating has just brought about disintegration of the crystal structure. Further heating brings about growth in crystal size and formation of stable compounds with crystallinity, and hence the pozzolanic activity is reduced. The different temperatures at which the different clay minerals disintegrate explains the variations in the optimum temperatures for each soil. The above results are all in agreement with our general knowledge on the thermal changes in clay minerals and the theory of surface activity."

Aside from the summary above, our

(Continued on page 144)

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This shot contained 110 three-inch holes, 36 feet deep and arranged in 5 rows. The total load was 11,000 pounds of "Nitramite" FR primed with 50% "Red Cross Extra" 2 x 16. Result—slightly over 30,000 tons of well broken limestone. Du Pont MS Delays were used to reduce vibration and improve fragmentation.

Why this quarry uses Du Pont "Nitramite"® FR after extensive trials with lower cost blasting agents

"In our limestone quarry at Rio, Wisconsin," reports W. C. Wendt, partner in Dann & Wendt, "we have found through extensive trials that Du Pont "Nitramite" FR gives us far better results than any of the cheaper ammonium nitrate products. In our widely varied custom drilling and blasting jobs, where we have to guarantee good results, we would not take a chance on these 'do-it-yourself' ammonium nitrate materials."

Du Pont "Nitramite" FR provides all the safety features of other blasting agents plus a much higher order of performance than other ammonium nitrate products.

You can use it for coyote shooting, or for pouring in drill holes of 2" diameter and over. While Du Pont "Nitramite" FR must be loaded under dry conditions, you can use it as a top load in wet holes above a water-resistant blasting agent or dynamite, for economy.

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For additional information, contact your Du Pont Explosives representative or write E. I. du Pont de Nemours & Co. (Inc.), Explosives Dept., Wilmington 98, Delaware.

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lubrication...
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ASK FOR RED-STRAND SERVICE BULLETIN NO. 103

To understand the urgent need for correct lubrication of wire rope, think of it as a machine with many moving parts. All its wires and strands are constantly stretching, twisting and rubbing against each other while the rope as a whole is rubbing against sheaves, drums and the like. This creates friction from end to end and wear will be excessive unless the rope is kept in condition with the right kind of lubricant correctly applied. The whole subject is very clearly explained in Service Bulletin No. 103 which is yours for the asking. Write today to H. K. Porter Company, Inc., Leschen Wire Rope Division, St. Louis 12, Missouri.

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Red-Strand
WIRE ROPE

H. K. PORTER COMPANY, INC.

LESCHEN WIRE ROPE DIVISION

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ROCKY'S NOTES

(Continued from page 142)

author concludes: "Microcrystallinity accompanied by faults in the structure seems to increase the reactivity of the products. Among the red or laterite soils and the black cotton soils, the former generally gives a more reactive surki. Iron oxides under certain conditions seem to have an important effect in the pozzolanic activity of some soils."

Some comments: The foregoing is especially interesting because the experiments were carried out with naturally disintegrated clays — in other words, the soils ordinarily encountered in agriculture everywhere. Organic impurities are obviously not objectionable, in fact, the ashes of organic matter may be helpful. It reminds us that some portland cement manufacturers have used the top soil from their quarry stripping operations for the clay ingredient. Since the same characteristics as in a pozzolan (described above) are desirable in a cement raw material, it is conceivable that such a soil, being already disintegrated, would be more economical to use than shale, or the usual stiff clay.

The point most to be emphasized in seeking for a successful pozzolan is evidently knowing its mineralogical structure. It has long been known that some of the best natural pozzolans are relatively high in alkalies. Just how the alkalies help is apparently not known, but it could be because they are evidence of an imperfect or a weak lattice structure, with easily ruptured bonds. In other words, you have, for example, a structure where aluminum with a valency of 3 is substituting for silicon with a valency of 4. For stability the missing valency must be filled with an element of valency 1, with hydrogen, sodium and potassium the most common. However such vacancies in the lattice structure are never all filled and we have strains in the structure from an unbalanced condition. So, again we see the practical value of a working knowledge of structural chemistry.

Lime-pozzolans: The most significant thing about the current interest in "pozzolans for use with lime" is that it required research in soil stabilization to arouse it. The lime industry is still thinking of lime-pozzolan activity in terms of soil stabilization for highway roadbeds. Under such conditions there is only a small percentage of lime used with a large percentage of pozzolan—if the pozzolan happens to be the native soil. The situation might be just

about reversed if the lime manufacturers were to make lime-pozzolan mixtures for mortar cements. It is true that one deterrent has always been the finding of a suitable raw material and right burning for a good pozzolan. That handicap is now being overcome. And in that connection another idea occurs to us.

Sand and gravel plant waste: One of the problems of a sand and gravel plant operation (and some crushed-stone operations) is disposal of the wash water and the sediment it carries. Who knows but that this waste sediment may be just the right material, if dried and burned to the right temperature, to make the kind of a pozzolan some nearby lime or cement manufacturer could use? Or the sand and gravel producer might be able to use it in his own ready-mixed concrete. Burned in a small rotary kiln as a slurry the operation might be simple and relatively inexpensive. There can be no question but that *some* of this wasted soil has, or can be treated to have, pozzolanic properties. Anyhow, we throw in the suggestion for what it may be worth. The Indian paper we have quoted from could furnish a good example of how to go about finding the answer.

We can even stretch our imagination a bit farther and see the large metropolitan sand and gravel producer calcining his waste wash sediments, combining them with lime, and marketing locally a very superior mortar material—an artificial hydraulic lime. While we speak of such a product as a mortar material, we mean more than a cement for laying up brick or concrete block masonry. We have in mind that much of the good old plaster, in England and in the early days in this country, was made of hydraulic lime. Nor have we forgotten the strenuous efforts of the lime industry a generation ago to develop a "self-hardening" lime plaster to compete with gypsum plaster. Hydraulic lime, natural or artificial, one thing they didn't try, would undoubtedly have helped save some part of the plaster market for the lime industry.

END

Enters European market

NATIONAL GYPSUM Co., Buffalo, N.Y., plans to sell about 25 percent of the asbestos produced at its new plant in Thetford Mines, Que., in Western Europe, the first time it has sold any product on that continent. Much of its output will be shipped to its building products plants in Millington, N.J., St. Louis and New Orleans.

Quaker belt conveying jagged granite rock from quarry.

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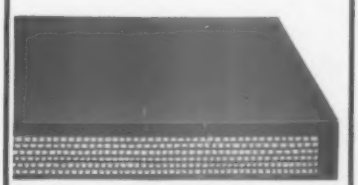
Quaker Conveyor Belting is especially designed for the rough ones—jagged loads of ore, gravel, brick that would tear most belting to shreds in short order. There's a special Quaker belting for every special need, with flexibilities, degrees of puncture-resistance and tensile strength for the toughest quarry requirements. Even covers and internal-ply designs can be modified as your needs dictate.

Your Quaker industrial distributor can give you the details on Quaker Conveyor Belting, and assistance on *all* problems involving industrial rubber products. Call him.



Cross-section Quaker No. 1 grade conveyor belt. For toughest handling problems of almost every conveyor job. Mildew-inhibited. Available in duck, rayon duck, and cotton-nylon ducks. In all lengths, with any number of plies. In widths up to 72".

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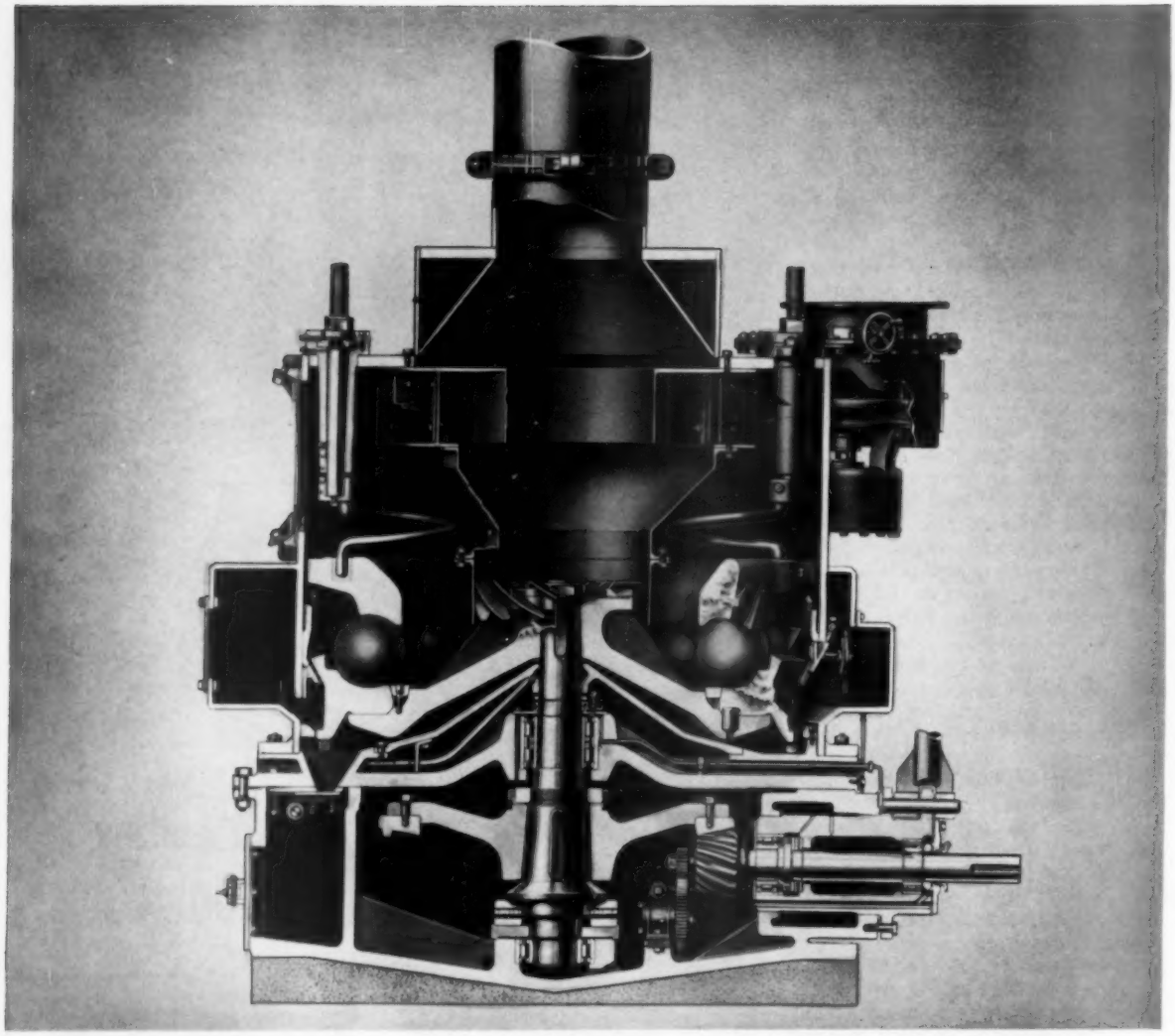

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BOILER DIVISION

C-219

Lima Type 1201 Shovel, owned by the Consumers Company of Chicago. Shown excavating limestone near McCook, Ill. The machine is equipped with a 32-ft. boom, 22-ft. dipper handle and 3½-cu. yd. dipper.

LIMAS prove their ruggedness and stamina in the quarries of Consumers Company

Robert J. Hummel, vice president and general manager of Consumers Company, a division of Vulcan Materials Company, says: "We bought our first Lima over 11 years ago. We now have six Lima 1201 Shovels in use in our quarries and gravel plants. Three of these shovels have been used in our quarries at McCook and Bellwood, Ill. We believe that quarry work is as severe a test of ruggedness and stamina as a shovel can be subjected to. We are glad to report that the 1201's stood up to this work and took their beating in stride.

"Incidentally, we have operated both of these quarries during severe winter weather during the last several years because of the press of business. We realize that cold weather puts an extra stress on the metal of equipment, and the Limas have come through this test with flying colors. Besides being tough machines, our operators say that the air controls make these shovels very easy to handle."

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NEW LITERATURE

Drives

THE FALK CORP., Dept. 255, has released 32-page Bulletin 7100 describing its line of all-steel, helical gear, shaft mounted drives for applications in the range from ½ to 50 hp. and from 420 to 5 rpm. output speed. Design and construction features are presented in addition to sheave and belt selection data.

Enter 712 on Reader Card

Dust collector valves

THE DUCON CO. has made available the following bulletins describing its free-discharge valves for dry dust collectors: Bulletin V-957 contains application, engineering and dimensional data on Type C two-door discharge gate valve, applicable for dry flowable materials; and Bulletin V-6157 covers Type FA trickle valve, which uses gravity for automatic operation.

Enter 713 on Reader Card

Feed controls

LOAD STAR CORP. has prepared a folder describing its Models CS-100 and CD-100 feed controls. An external schematic wiring diagram and a variable load chart are provided.

Enter 714 on Reader Card

Filter protection

SCHROEDER BROTHERS CORP. has issued a bulletin describing its Spindicator, an instrument for determining the condition of an oil filter. Installation and ordering instructions and general specifications are given.

Enter 715 on Reader Card

Grease lubricant

THE ALPHA-MOLYKOTE CORP. has released Bulletin 114 covering the uses of its Type BR-2, a lithium soap base heavy duty lubricant packaged in cartridges and applied from a grease gun.

Enter 716 on Reader Card

Grinding machine

STURTEVANT MILL CO. is offering Bulletin 091 describing its Micronizer, a fluid energy grinding machine. Sizes, pressure requirements and capacities are tabulated. Typical grinding data for various materials are provided, as well as a cross-section drawing and a flow sheet of a complete unit.

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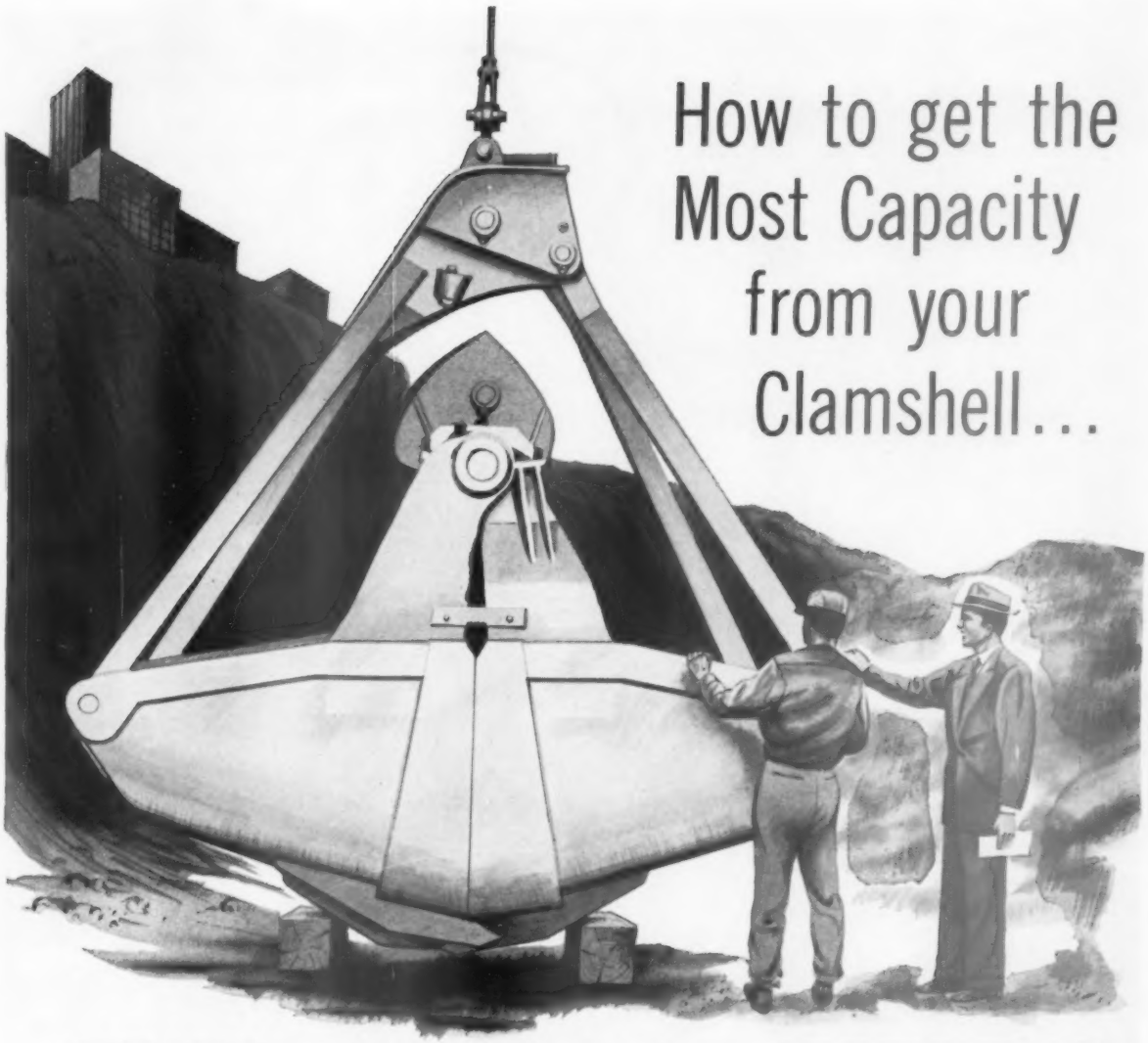
(Continued on page 152)



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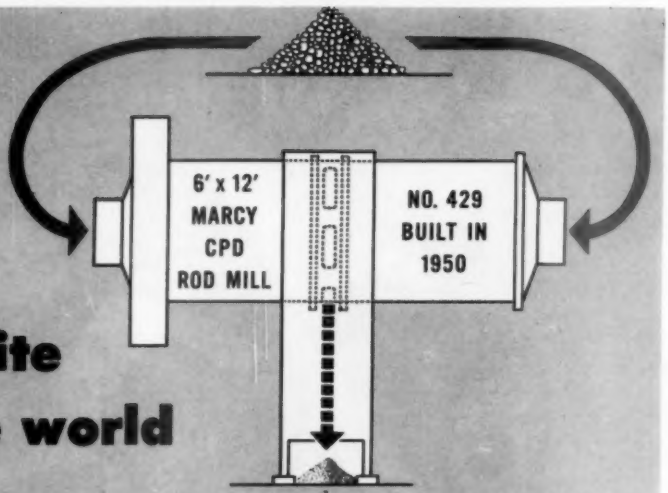


This World Traveler...

Provided Specification Sands for LOOKOUT POINT DAM, Lowell, Ore., 1950

Photo courtesy Corps of Engineers, U. S. Army

Constructed and operated by the Corps of Engineers, U. S. Army, Portland District, for flood control and power. This earth and concrete dam, and the Dexter Dam, a reregulating unit, required 996,000 cu. yds. of concrete. Contractors were Morrison-Knudsen, Peter Kiewit Sons Co., and Macco Corporation.

Provided Specification Sands for TABLE ROCK DAM, Branson, Mo., 1954

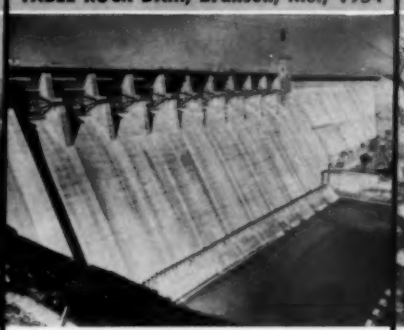
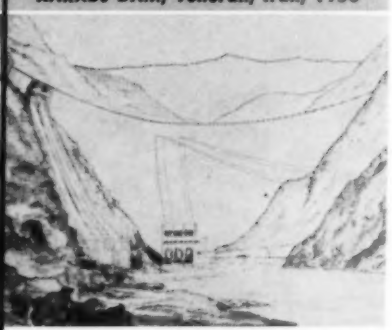


Photo courtesy Corps of Engineers, U. S. Army

Constructed and operated by the Corps of Engineers, U. S. Army, Little Rock District, for flood control and power. 1,300,000 cu. yds. of concrete were involved on this earth-concrete structure. Morrison-Knudsen Co., Inc., and Utah Construction Co. were the contractors.

Will Provide Specification Sands for KARADJ DAM, Teheran, Iran, 1958



Scheduled for completion in 1961 this dam will be 590 ft. high, one of the ten highest concrete dams in the world, and will require 915,000 cu. yds. of concrete. It will be a source of city water supply, power and irrigation. Harza Engineering Co. International prepared plans and specifications. Morrison-Knudsen Co., Inc., was awarded the contract by Iran. An 8' x 12' Marcy CPD Rod Mill is also on order for this project.

Morrison-Knudsen purchased this 6' x 12' Marcy CPD Rod Mill in 1950 for use in producing specification sands for the Lookout Point Dam; moved it to their job on the Table Rock Dam; and will use it, along with an 8' x 12' Marcy CPD Rod Mill, on Iran's Karadj Dam.

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B.F.Goodrich tires give up to 50% more service, contractor reports

F. R. HEWETT CO., general contractor of Spokane, Washington, operates 147 pieces of equipment on jobs throughout the Pacific Northwest. Here the job is the Spokane Valley Freeway. "We switched to B.F.Goodrich FLEX-RITE NYLON Rock Logger tires 3 years ago," writes Truck Supt. Richard M. Ward. "They have given us up to 50% more service than the tires we used previously—and we have been able to retread them too!" Today Hewett uses B.F.Goodrich tires 100%.

Reports like this come in from contractors all over the country. They find B.F.Goodrich off-the-road tires give them longer, trouble-free service, thanks in part to FLEX-RITE NYLON cord construction. FLEX-RITE NYLON withstands double the impact of ordinary cord materials, resists heat blowouts and flex breaks. Result: the FLEX-RITE NYLON cord body outwears even extra-thick B.F.Goodrich treads —can be retreaded over and over.

Follow the lead of contractors like Hewett, who reports B.F.Goodrich tires give "very low cost per hour." See your B.F.Goodrich dealer today. He's listed under Tires in the Yellow Pages of your phone book. And ask about the new Rock Service Tubeless or conventional tire that prevents unnecessary tire failures! *B.F.Goodrich Tire Co., A Division of The B.F.Goodrich Co., Akron 18, Ohio.*

Specify B.F.Goodrich Tubeless or tube-type tires when ordering new equipment

B.F.Goodrich truck tires

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LOOKING FOR A SAFE BUY IN USED EQUIPMENT?

This sign identifies the *safest buy* in used equipment—a "Bonded Buy" offered by your Caterpillar Dealer. Safest because you get a Guarantee Bond of up to $10,000, assuring you of satisfactory performance of all parts when you make a "Bonded Buy" on any used Cat-built machine.

Your Caterpillar Dealer also offers a "Certified Buy" with his written guarantee covering units of any make. Or a "Buy and Try" deal, which carries a written money-back agreement.

For the safest buys in today's used equipment market, see your Caterpillar Dealer today.

Caterpillar Tractor Co., Peoria, Ill., U.S.A.

CATERPILLAR

Caterpillar and Cat are Registered Trademarks of Caterpillar Tractor Co.

BEST BUY IN NEW AND USED EQUIPMENT

Enter 1491 on Reader Card

NEW LITERATURE

(Continued from page 148)

Materials handling systems

FLUOR PRODUCTS CO. has published Bulletin GFH-1157 covering its bulk materials handling equipment. Described are: Pneumatic, suction and pressure conveying systems; prime movers; mechanical conveying systems; dust and fume collection systems; and classifying systems.

Enter 700 on Reader Card

Oil testing kit

A LENGOR BULLETIN describes its Simplex testing kit for users of gasoline, diesel and gas engines in measuring the presence of harmful contaminants in used engine oils.

Enter 701 on Reader Card

Portable truck scales

THURMAN MACHINE CO. Scale Division, has brought out Bulletin 601 describing features of its portable truck scale available in 10 sizes from 18 x 8 ft. to 43 x 10 ft. and having load capacities from 20 to 50 tons.

Enter 702 on Reader Card

Roller mills

BRADLEY PULVERIZER CO. has released Catalog 63 describing its screen type and pneumatic type Hercules roller mills for the pulverizing of nonmetallic minerals to finenesses ranging from 10 to 325 mesh. Capacities, characteristics, power and weights are given for the "6000" Type and Type "B" junior mill, and the B. P. 8 and Types 8, 9 and 10 pneumatic mills.

Enter 703 on Reader Card

Sand and gravel machines

SAUERMAN BROS., INC. has made available Bulletin SG-1 containing on-the-job reports of its DragScrapers, excavators, and slackline cableways. Operations including high banks, long span pits and deep digging under water are covered.

Enter 704 on Reader Card

Screw conveyor components

LINK-BELT CO. is distributing Folder 2489 describing five newly designed components that have been added to its screw conveyor line. Included are: Double ball bearing trough ends; Quik-Link conveyor screw; ball-bearing hangers; Motogear enclosed drive; and enclosed countershaft end.

Enter 705 on Reader Card

Testing equipment

CUSTOM SCIENTIFIC INSTRUMENTS, INC. is distributing Catalog 58 illustrating and describing its testing and calibration instruments and fixtures for use in the cement industry. Engineering services offered also are discussed.

Enter 706 on Reader Card

Thermometers

MINNEAPOLIS-HONEYWELL REGULATOR CO. Industrial Division, has published 56-page Catalog C60-2 describing its line of rectangular case filled system thermometers for indicating, recording and controlling. Vapor actuated, gas actuated and mercury actuated thermometers and thermal systems for use between limits of -125 deg. F. to 100 deg. F. are listed and explained. Also released was Catalog G100-8 describing its line of thermocouple accessories.

Enter 707 on Reader Card

Tractor scraper

EUCLID DIVISION, General Motors Corp., has published 24-page Form 554 describing its Model TS-24 twin power tractor scraper. Performance figures and specifications are included to provide data on speeds, gradeability, engines, transmissions, tires, scraper controls, planetary drive axles, weights and dimensions.

Enter 708 on Reader Card

Wheels and rollers

FARREL-CHEEK STEEL CO. has prepared Catalog 24 describing its plain tread, single and double flange wheels and rollers. A section is given to discussing special wheels and rollers. Specifications and engineering data are included for all types.

Enter 709 on Reader Card

Wobbler feeders

UNIVERSAL ENGINEERING CORP. is distributing Bulletin CC 2-57 covering its wobbler elliptical bar feeder and FD-8 manganese apron feeders.

Enter 710 on Reader Card

Woven wire products

F. P. SMITH WIRE & IRON WORKS has made available Catalog 130 describing its MetaLoom products, including woven wire cloth, space screens, partitions, grilles, screens, baskets and trays. Also provided is a handbook of tabulated wire sizes, weights and clear openings.

Enter 711 on Reader Card

END

Enter 1492 on Reader Card

These are some of the reasons why H. Gibson Stewart prefers the

CATERPILLAR NO. 955 TRAXCAVATOR*

H. Gibson (Gib) Stewart, Stanhope, N. J., contractor, has nothing but praise for the No. 955 Traxcavator he bought last year. His assistant, David J. Smith, sums up how they feel about it this way:

"What we like best about the No. 955 Traxcavator is that long-life oil clutch and the high loading position. Its digging power is very good, too, and the operator has good visibility and a comfortable seating position. Another important thing is the availability of quick service from our Caterpillar Dealer."

Shown above, the Traxcavator is loading a truck on a hydraulic dredge operation at the Sequine & Bogart Sand and Gravel Pit, Succasunna, N. J. The contract is for the removal and disposal of approximately 4 ft. of hardpan and topsoil from sand. With this CAT* No. 955 Traxcavator under him, the operator has loaded as many as 100 trucks in one day.

Glowing reports of more lift, faster lift and more production per pound of machine continue to come in from owners of these rugged, hard-working excavator-loaders. The complete Traxcavator line consists of the No. 933, 50 HP, 1 cu. yd. bucket; the No. 955, 70 HP, 1½ cu. yd.; and the No. 977, 100 HP, 2¼ cu. yd. A wide variety of buckets and attachments are available for these unit-built machines.

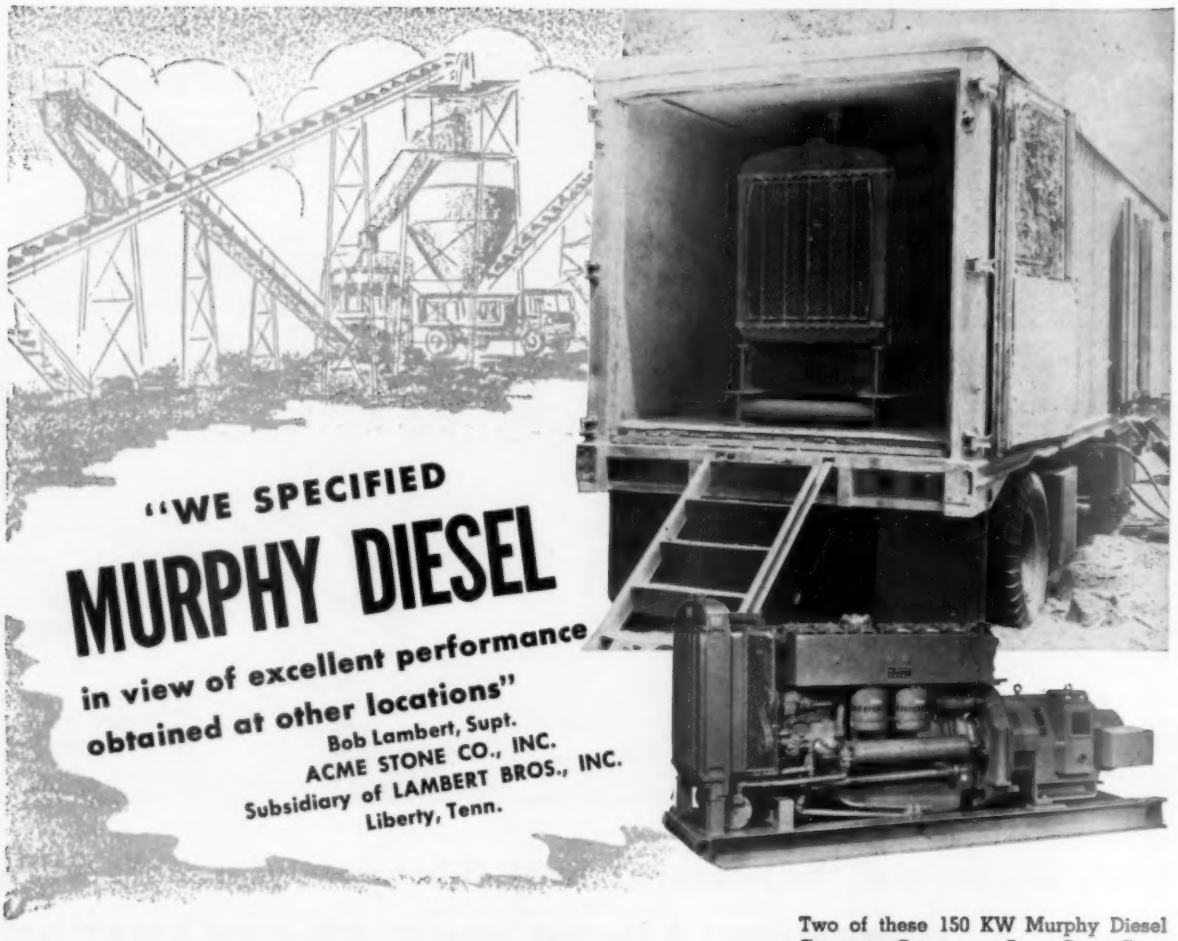
Get the full story from your nearby Caterpillar Dealer. He'll give you the *facts* and a demonstration on *your* job to help you make your decision. After you buy, you can depend on him for good, prompt service and parts you can trust.

Caterpillar Tractor Co., Peoria, Illinois, U. S. A.

CATERPILLAR*

*Caterpillar, Cat and Traxcavator are Registered Trademarks of Caterpillar Tractor Co.

WANTED—
THE HARD WORK



"WE SPECIFIED

MURPHY DIESEL

in view of excellent performance obtained at other locations"

Bob Lambert, Supt.
ACME STONE CO., INC.
Subsidiary of LAMBERT BROS., INC.
Liberty, Tenn.

Two of these 150 KW Murphy Diesel Generator Sets power Acme Stone Company's entire plant, except the rolls. Operating 10 hours a day, the plant averages 2000 tons of sized road stone for relocation of State Highway 57.

In selecting power for profitable operations, Acme Stone Co. follows the lead of its parent company, Lambert Bros., Inc. Operating extensively in Tennessee and Ohio, Lambert Bros. *specifies Murphy* for generator or auxiliary power for crushing plants.

It will pay you to follow the lead of successful operators like Acme and Lambert. Ask your Murphy Diesel Dealer to show you how Murphy Diesel's economy of operation and dependability in heavy-duty service helps keep profits high and costs low.

Wherever your job is located, there's a dependable Murphy Diesel Dealer nearby. You can count on him for prompt, expert maintenance and parts service.

MURPHY DIESEL

HEAVY-DUTY POWER
for Rock Crushing

Murphy Diesel engines and power units are available in sizes from 96 to 264 H.P. with engine speeds of 1200 and 1400 rpm. "Packaged" generating units are available with capacities ranging from 64 to 165 K.W.

MURPHY DIESEL COMPANY

5315 W. Burnham St., Milwaukee, Wisconsin

SALES . . . PARTS . . . SERVICE

Throughout the Nation

380 RO

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NEW U. S. PATENTS

OLIVER S. NORTH

Recently issued patents on nonmetallic minerals*

Cement

2,820,713—Dry compositions to be mixed with water to form a mortar useful for laying ceramic tile, pointing brickwork and for bonding terrazzo, cinder block and the like. **Portland cement** is the principal ingredient. Among minor ingredients are methyl cellulose and an alkaline earth metal polysulfide or related compound. Optional additives include calcium chloride and aluminum powder. (to H. B. Wagner. Assigned to Tile Council of America, Inc.)

Olivine

2,822,278—New foundry mold and core composition having high green strength and other desirable qualities comprises essentially about four parts of western **bentonite,** 10 parts **olivine** flour and the remainder **silica sand.** Silicosis danger is minimized, and castings produced using this mixture display high finish detail. (to H. W. Dietert and W. M. Ball III. Assigned to International Minerals & Chemical Corp.)

Phosphate rock

2,820,703—Process for rapidly and economically composting many kinds of organic waste materials. Raw **phosphate rock** is intermixed with such starting materials as coffee grounds, manure, etc. (to W. C. Dresser and R. D. Jacobson. Assigned to American Cyanamid Co.)

Trona

2,822,158—Method for underground solution mining of **trona, salt** and other dissolvable minerals, whereby expense of drilling a large number of input and output wells is obviated. The solvent-introducing pipe is of flexible steel, and can be forced to bend at more or less right angles to the axes of the well bore. This pipe is deflected into the ore bed and forced from above simultaneously with feeding of solvent. Pipe can be advanced to considerable distances. Relatively remote portions of the mineral bed may be subjected to action of fresh and strong solvent under pressure, being readily dissolved thereby. In general, the greater the dip of stratum, the greater the distance probing nozzle can be advanced. An extensive bed of trona or salt can be removed through comparatively few well bores. (to W. C. Brinton.)

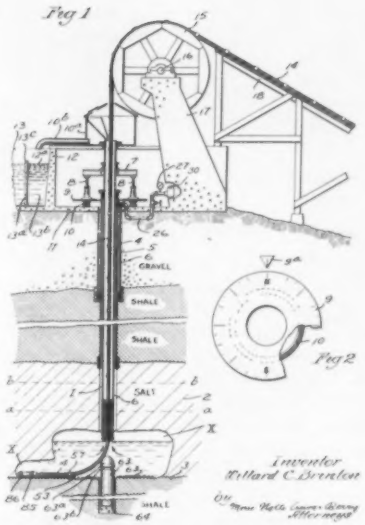


Diagram of Patent No. 2,822,158

Fig. 1 is a diagrammatic vertical sectional view of one form of this invention. The surface apparatus is essentially standard and will not be described here. Well (1) is drilled to mineral stratum (2), and the hole fitted with a regular casing assembly used for underground solution mining. Post (63) having a rounded upper end (63a) is set into formation underlying mineral bed.

Hollow, flexible metal pipe (14) is fed downward through center of hole, and is deflected by post (63). Solvent is projected continuously through nozzle (86) at end of flexible pipe. Nozzle advances as mineral is dissolved. Mineral-laden solution is pumped out as in conventional practice, either through the input hole or through nearby output hole or holes (not shown.) Nozzle is alternately directed in all directions from hole. This method can be adapted readily for use in various other situations, such as for mining tilted beds.

Magnesite

2,822,304—Process for decolorizing and purifying impure sugar solutions. Solution is treated with an activated carbonaceous adsorbent material together with dead-burned **magnesite** in an amount effective to control the pH of the solution close to neutral. The chemically precipitated Cape May type of magnesite is generally preferable for the process. (to D. W. Gillmore, R. J. Grant and S. B. Smith. Assigned to Pittsburgh Coke & Chemical Co.)

2,823,134—Method of forming high-purity, high-density periclase. A mixture of a finely divided magnesium compound, for example, **magnesite,** and a small amount of a lithium compound are fired to at least 1000°C. (to L. M. Atlas. Assigned to Armour Research Foundation of Illinois Institute of Technology.)

Lime

2,823,107—Use of **quicklime** in the manufacture of a material used to supply plants with needed zinc, phosphorous, manganese and the like. (to J. R. Allison. Assigned to Leffingwell Chemical Co.)

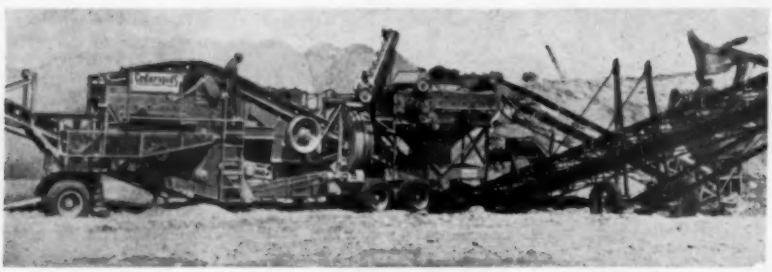
Graphite

2,821,016 — Improved cooling and lubricating solution for direct application to hot forging dies and billets being fed to dies comprises a water solution containing a relatively small percentage of suspended colloidal **graphite** and from 1½ to 7 percent of a soluble cutting oil. (to W. Dickson.)

END

*Copies of United States patents are available at a cost of 25 cents each from The Commissioner of Patents, Washington 25, D.C. For convenience, coupons, each good for one copy of any patent, may be purchased from that official at the rate of $5.00 per 20-coupon pad or $25.00 per 100-coupon pad.

NEW MACHINERY



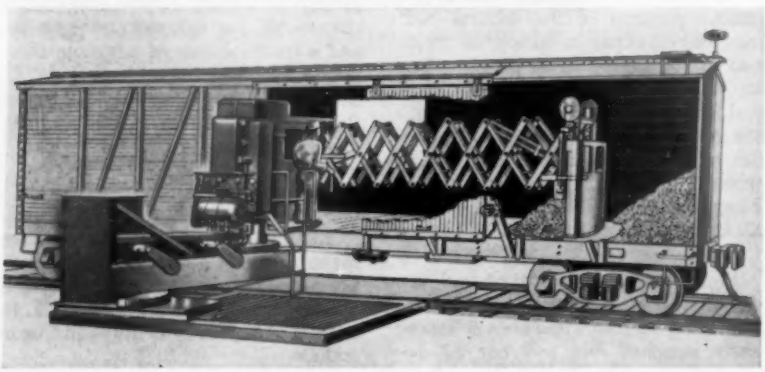
Pre-screening attachment for portable crushers

A PRE-SCREENING ATTACHMENT for mounting on Cedarapids portable crushing and screening plants provides two full decks of scalping area ahead of the crushing plant for additional flexibility in meeting specifications. The unit is designed to remove or bypass excessive fines or dirt and make the operation of a single portable plant more productive, more versatile, and economically practical in low grade material where the percentage of fines is high.

The attachment is interchangeable with the standard hopper and feeder of either a Cedarapids Commander or Junior Tandem plant. It consists of a Cedarapids standard 10 ft. double-deck horizontal vibrating screen with drives from the plant, and drive to the optional feed conveyor if desired. The screen is mounted in a frame over a hopper containing a flop gate that can be arranged to take off all undersize material passing both screen decks before it reaches the plant crushers, or to blend any desired percentage of pit run fines with the crushed material to meet specifications. *Iowa Mfg. Co., Cedar Rapids, Iowa.*

Enter 300 on Reader Card

Box car unloader is hydraulically operated



A METHOD OF BOX CAR UNLOADING is said to unload granular, pulverized or any free-flowing materials from the largest box cars in less than 30 minutes per car. The redesigned hydraulically-powered unloader features one-man operation. Boom swivel and scoop actions are hydraulically actuated and can be operated automatically during much of the unloading cycle.

Other advantages include positive digging and raking action of the scoop. The flexibility of design allows for unloading operations on a single or double parallel track system. By having the operator located on an operation platform outside the box car, the dangers of dust exposure and accidents are eliminated. *Stephens-Adamson Mfg. Co., Ridgeway Ave., Aurora, Ill.*

Enter 301 on Reader Card

Bag handling conveyor

A WOVEN WIRE BELT CONVEYOR for handling bags of cement, lime, talc and other bulk materials, has been developed to take bags that have been filled by an automatic loading device and carry them to a shipping area or other destination.

A unique feature of the Korb-Pettit design is a set of adjustable spring shock absorbers which supports the roller platform and eliminates bag breakage. The springs can be adjusted to provide the correct amount of shock absorption for bags of various weights.

The conveyor is available as a portable unit mounted on casters or as a fixed, permanent installation. The drive mechanism can be furnished for constant or variable speed, depending on requirements. *Hewitt-Robins Inc., Stamford, Conn.*

Enter 302 on Reader Card

Track adjuster

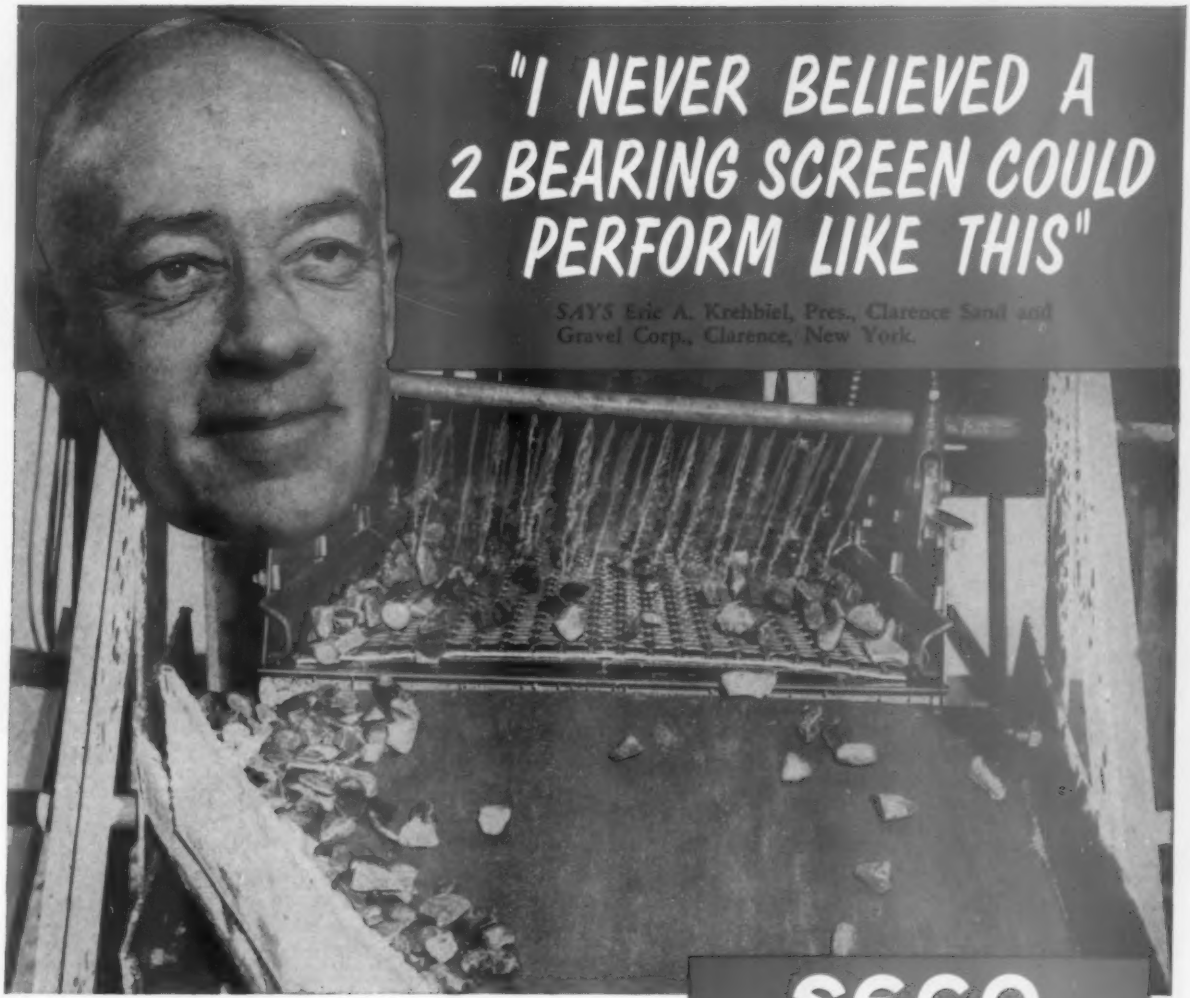
A TRACK ADJUSTING DEVICE has been tailor-made for all models of Allis-Chalmers, Caterpillar and International crawler tractors. Track adjustment can be accomplished in 2 or 3 min.

It consists of a static hydraulic cylinder (indicated by arrow), piston and seal which in most cases replaces the adjusting screw and threaded retainer. Track adjustment is accomplished by pumping any medium or heavyweight grease into the cylinder chamber with a standard hand grease gun.

Track tension is released by opening a bleeder valve at the base of the cylinder. An adjusting force of approximately 10,000 psi. can be obtained with the hand grease gun. Multiplied by the area of the piston, this gives an adjusting force in excess of 30,000 lb. *Machinery Parts Sales Corp., P. O. Box 10243, Dallas, Texas.*

Enter 303 on Reader Card

(Continued on page 160)


"I NEVER BELIEVED A 2 BEARING SCREEN COULD PERFORM LIKE THIS"
SAYS Eric A. Krehbiel, Pres., Clarence Sand and Gravel Corp., Clarence, New York.

"We're averaging 120 TPH in three sizes of gravel plus concrete sand . . . with no trouble at all!"

Take it from Eric A. Krehbiel, the SECO TWIN-BEARING SCREEN on-the-job at Clarence Sand and Gravel Corporation is a real workhorse.

"We're making three finished sizes over our 3 x 10 Triple Deck TWIN-BEARING SECO and we're meeting specs. to a T. We have really accurate sizing of our coarse aggregate through to our concrete sand."

"Smooth, did you say? Well, we never believed a two-bearing screen could perform like this SECO TWIN-BEARING. It's great!"

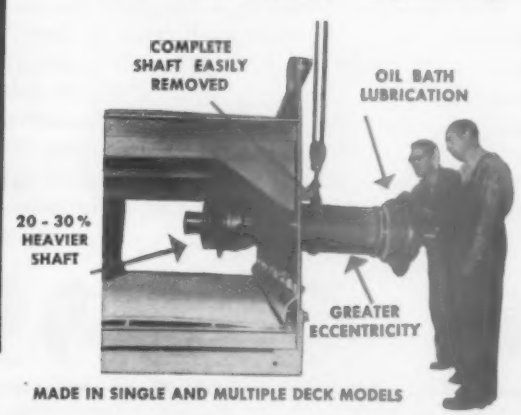
SEND FOR NEW BOOKLET TB-21

SCREEN EQUIPMENT CO., Inc.

Buffalo 25, New York

SECO Twin-Bearing SCREENS

with "YEARS AHEAD" Engineering



MADE IN SINGLE AND MULTIPLE DECK MODELS

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looking for

BIG TONNAGES

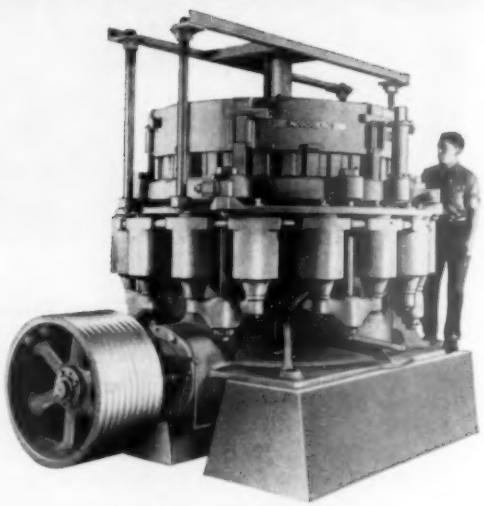
of finely crushed product?

. . . then you need the Gyradisc® CRUSHER

HERE you see a handful of specification sand made by the Gyradisc Crusher . . . from a Pea Gravel feed, previously considered a "costly, difficult material to crush."

This is but one example of what producers may expect of the Gyradisc Crusher . . . but more important, the Gyradisc in most cases substantially reduces the cost of producing a finely crushed product . . . such as manufactured sand or other specification material from a minus ¾" feed of crushed stone or Pea Gravel.

The Gyradisc Crusher is designed specifically for the low cost, large volume production of fines. If you are faced with a critical shortage of fine material, want to expand your market or want a profitable solution to the problem of handling and disposing of excessive Pea Gravel or other unsaleable material . . . it will pay you to investigate the Gyradisc. It has benefited other operators and may help you. *Nordberg Mfg. Co., Milwaukee, Wisconsin.*



Built to supplement the Symons® Cone Crusher, the 54" Gyradisc Crusher is providing volume production of still finer specification material. It is currently being used for the production of many materials such as agricultural limestone, limestone chips, sand, rock dust, crushed stone for asphalt mix and the fine reduction of asbestos and talc. *Write for Bulletin 228.*

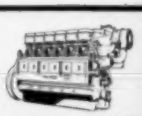
SYMONS . . . *A Registered Nordberg Trademark Known Throughout the World.*

Symons Gyratory and Cone Crushers

Nordberg Grinding Mills

Symons Vibrating Grizzlies and Screens

Nordberg Engines . . 10 to over 12,000 hp.



NORDBERG MACHINERY

NORDBERG

SYMONS SCREENS NORDBERG

MACHINERY FOR PROCESSING ORES and INDUSTRIAL MINERALS

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TORONTO • MEXICO, D. F. • LONDON • GENEVA • JOHANNESBURG

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C257

Firestones keep the job on schedule!

From the Pan-American Highway to the Barnhart Power Dam on the St. Lawrence Seaway, Firestones are slashing downtime losses, cutting tire costs. Firestone Rock Grip Tires with S/F (safety-fortified) Nylon withstand severest punishment to outwork and outwear them all! Two great non-directional tread designs adapt these off-the-highway tires to *any* terrain and eliminate excessive spare tire inventories. You get the *flotation and traction* you need in loose earth and wet going. You get S/F Nylon's *armored* protection for hauls over splintered shale and knife-edged rock. Firestone tires defy cuts and slugging impacts like no other tire made. Ask your local Firestone Tire Sales Expert about these *tubed* or *tubeless* heavy-duty tires. Call him today at your local Firestone Dealer or Store.

Rock Grip Wide Base Rock Grip

Enter 1531 on Reader Card

Firestone

BETTER RUBBER FROM START TO FINISH

Enjoy the Voice of Firestone on ABC television every Monday evening.

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(Continued from page 156)

Hard facing alloy

SURFACES OF BEARINGS, machine cams, kicker fingers and other metal components subject to wear now may be rendered an estimated 150-percent more wear-resistant through application of a new "coating" material. A soft-base carbide-impregnated metallic material, the alloy is easily applied to ferrous surfaces. The procedure involves the use of an ordinary metallizing type gun for hot spraying, followed up with a heat treatment from the direct flame of an oxyacetylene torch for final fusion.

The new material, called Spra-Carb, is sprayed on the base metal in thicknesses up to 1/16 in. and fuses at temperatures of 1,300 to 1,400 deg. F.

Besides metalworking applications mentioned above, the carbide coating alloy can be used to retard wear on tool bits and joints employed in drilling operations, pulverizers and grinding equipment in the quarry industry. *Walmet Corp., 29900 John R, Madison Heights, Mich.*

Enter 304 on Reader Card

Dump trailer

A NEW FRAMELESS EXCAVATOR'S dump trailer is being produced in models ranging from 20 to 24 ft. long. To provide easier unloading, body width is tapered—82 in. wide at the front end and 88 in. wide at the rear.

The trailer is built of 8 ga. steel and has ¼ in. wear plate. Its double floor has one filler of 2-in. oak. The unit has extra-heavy boxed top roll and horizontal braces, a reinforced cylinder well, 42,000 lb. tandem suspension, 16½ x 7 air brakes, 11:00 x 20 14-ply tires and it weighs 16,880 lb.

Dump action is provided by a twin 7-in. Teleramic hydraulic telescopic hoist having a lifting capacity of 40 tons. Trailers equipped with hoists having capacities up to 50 tons are available. *Anthony Co., Streator, Ill.*

Enter 305 on Reader Card

Rubber tired loader is first in a series

THE W-9 TERRALOAD'R is the forerunner of a new series of heavy-duty, rubber-tired industrial loaders to be introduced in the near future. Three interchangeable buckets are available for the W-9—a 1⅜-cu. yd. (heaped) heavy-duty digging bucket, 1¾-cu. yd. standard material bucket and 2¾-cu. yd. light-material bucket.

Outstanding new design feature is the use of short, rigid lift arms, pivoted forward of the operator's position. This, together with a low center of gravity and extra-wide wheel tread are said to give the W-9 exceptional side-stability, as well as longer forward-reach in all positions. Forward-reach at 7-ft. dump height is 62½ in. Location of the lift-arm-pivot and elimination of all linkage in back of the bucket are also said to offer important safety advantages.

Better lateral stability is due primarily to improved weight distribution. Rear wheels carry 40 per cent more weight than front wheels, so there is no tendency to "buck" or raise the rear wheels off the ground. Independent differential in each axle insures equal power to all wheels at all times. A 42.5 gpm. hydraulic pump, operating at 1,800 rpm. gives the W-9 a breakout force of 11,000 lb. at ground level and a lifting capacity of 5,500 lb. with bucket in carry position. The W-9 is powered by a 251- cu. in. high torque Case industrial engine (diesel or gasoline) equipped with Torqmatic drive. *J. I. Case Co., Racine, Wis.*

Enter 307 on Reader Card

Round drill rod

ROUND HOLLOW extension steel 1½-in. diam., is being supplied for use on the crawler-type blast hole drilling machines. It is furnished in either 10 or 20 ft. lengths, with K or 600 threads, in carbon steel. Rod couplings and bit adapters also are available for use in long hole drilling. *Brunner & Lay, Inc., 9300 King St., Franklin Park, Illinois.*

Enter 306 on Reader Card

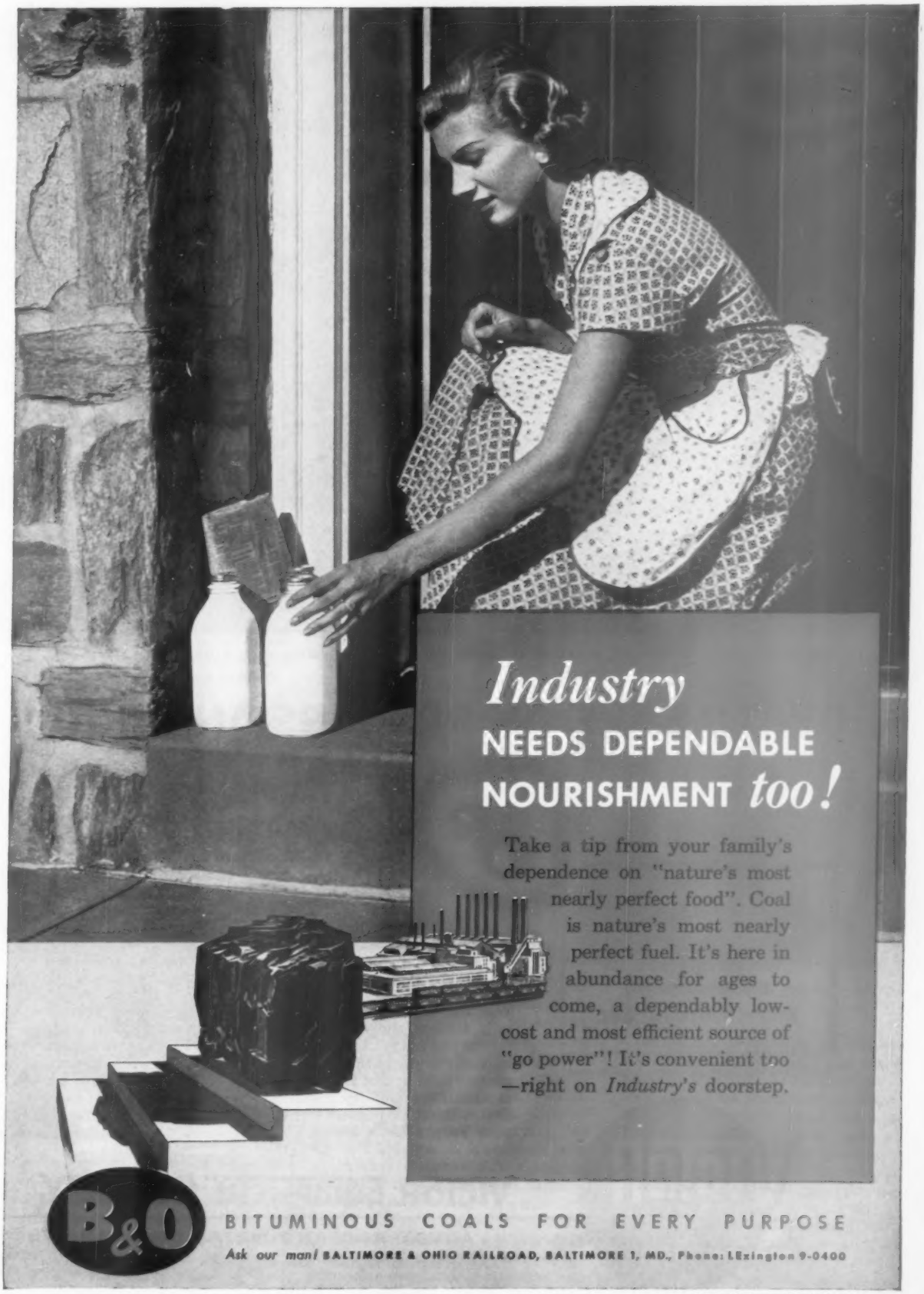
Immersible motor

AN IMMERSIBLE MOTOR has been designed for close-coupling to agitators or pumps in sumps or other submerged applications. In pump applications this flange-mounted motor eliminates connecting components, intermediate bearings, couplings, shafting, special bases, since the motor shaft is directly attached to the impeller. Motor and pump can be raised and lowered into position together by the motor's lifting lugs.

Features include leak-tight construction, neoprene breathers oil-filled at factory, waterproof cable connection, compact design and corrosion resistant parts. It is engineered for submerged pumping service, mixers, agitators and special applications in ratings of ¾ to 40 hp., both single and polyphase. *The Louis Allis Co., Dept. P, 427 E. Stewart St., Milwaukee 1, Wis.*

Enter 308 on Reader Card

(Continued on page 163)


Industry
NEEDS DEPENDABLE
NOURISHMENT *too!*
Take a tip from your family's dependence on "nature's most nearly perfect food". Coal is nature's most nearly perfect fuel. It's here in abundance for ages to come, a dependably low-cost and most efficient source of "go power"! It's convenient too —right on *Industry's* doorstep.
B&O
BITUMINOUS COALS FOR EVERY PURPOSE
Ask our man! BALTIMORE & OHIO RAILROAD, BALTIMORE 1, MD., Phone: LExington 9-0400

Enter 1505 on Reader Card

This roller, hardfaced with Victoralloy, shows practically no wear after crushing 40 tons of rock hourly, 8 hours daily for 30 days.

HOW TO SAVE ON ROLLERS AND ROD

....*Use VICTOR Hardfacing*

Tracy Rock & Gravel Co., Tracy, Calif., crushes 40 tons of rock hourly, prolongs roller life on this rough work by rebuilding with ¼" VICTORALLOY #1 Bare Electric rod, 28" length. Says plant superintendent Albert Parker:

> "Victoralloy's ease of application and fast buildup mean a lot to us. There is no lost time as we use 28" length rod; when it burns down, we touch a new rod to the old one, and keep on welding without even lifting the helmet."

You, too, can save rod and increase working life of crusher rolls, screens, shovel teeth, tractor rollers and idlers, dredge pumps and many other parts subjected to abrasion and severe impact. Simply hardface with VICTORALLOY. It welds to manganese, steel or cast iron. You get all position hardfacing, exceptional arc stability, deposits free of porosity, fast application without slag interference. Try it. Order a supply from your VICTOR dealer TODAY.

• FREE •

Victor Hardfacing Manual shows you right rod to use and how to apply it.

Write us NOW for your copy.

Profitable dealerships open; inquire now!

VICTOR for hardfacing

VICTOR EQUIPMENT COMPANY

ALLOY ROD AND METAL DIVISION

13808 E. Imperial Highway, Norwalk, Calif. • Wakita, Oklahoma

Enter 1454 on Reader Card

NEW MACHINERY

(Continued from page 160)

Liquid limit test set

STANDARD STEEL FOUNDERS' Society liquid limit testing sets for bentonite are now available. The test sets conform to the Society's specifications for western bentonite.

The bentonite mixer is a high speed apparatus with stainless steel mixing blades and shaft. Bentonite is placed in the jar which is fitted with a quick sealing aluminum cover. This cover also contains the bushing in which the mixing shaft is guided. The operator moves the mixing jar up and down while the blade is rotating.

The device has an upright attachment for holding the flat scribing tool in position. This tool has a "V" shaped nose which is used to form the groove in the cup. An etched mark on the cup indicates the level to which bentonite is to be placed for the test.

Other apparatus in the test set includes a mixing spatula, graduated glass cylinder, aluminum sample containers, extra dispersion jars, mixing dish and data sheets. *Soiltest, Inc., 4711 W. North Ave., Chicago 39, Ill.*

Enter 324 on Reader Card

Twin-bearing screens

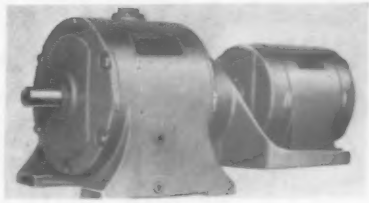
AFTER SEVERAL YEARS OF EXHAUSTIVE TESTING in the field, a line of two bearing screens has been introduced. Seco Twin-Bearing screens are of rugged construction, yet operate smoothly and efficiently in the screening of sand, gravel, crushed stone, cinders, slag, and many other materials.

The shaft in the Twin-Bearing screens is substantially heavier and the bearings are larger and are lubricated by an oil bath. To offset the normal tendency of two-bearing screens to lose vibration amplitude under load, the super-duty shaft is made with a greater eccentricity, resulting in a balanced eccentric unit.

Standard models are offered in single deck construction in 3 x 6 ft. to 6 x 16 ft. sizes; double deck, 3 x 6 ft. to 6 x 16 ft. and triple deck, 3 x 6 ft. to 6 x 12 ft. Special models with half-decks (up to 3½ decks) are available. Dust housed models can be made to order. Screens can be equipped with electric wire cloth heaters (as illustrated) for screening fine, damp or sticky materials.

Seco Twin-Bearing screens are equipped with necessary fittings for cable suspension. For base mounting a factory designed mounting is available. *Screen Equipment Company, Inc., Buffalo 25, N.Y.*

Enter 325 on Reader Card



Gearmotor line

NOW AVAILABLE ARE STRAITLINE integral and all-motor gearmotors ranging from 1 to 60 hp. and from 9 to 520 rpm. The line features interchangeability of gear sets and motor packages in the field without disconnecting the gearmotor from its foundation or the driven shaft; changing of ratio in the field quickly and simply when output speed variation requirements arise; easier servicing in the field with gear housings accessible from either end and flexible inventory.

The StraitLine all-motor gearmotor is pictured here. *Western Gear Corporation, P. O. Box 182, Lynwood, Calif.*

Enter 326 on Reader Card

Tractor shovel handles four cubic yards

THE NEWEST ADDITION TO THE TROJAN LINE of 4-wheel drive pneumatic tire loaders, the 4-cu. yd. Model 404, weighs 40,500 lb. and has an operating capacity of 14,000 lb. It is designed to handle all types of bulk materials. Model 404 is powered by a 6 cylinder, 425.6 cu. in. displacement, General Motors diesel engine, developing 240 hp. at 2,250 rpm. It is equipped with an Allison planetary full automatic torqmatic transmission and Timken Detroit planetary axles. Another feature of the model is the straight-line horizontal thrust of the operating arms, which starts the push of the arms from the rear of the machine and continues it through the body of the machine to the cutting edge of the bucket.

In addition to the 4-cu. yd., 120-in. wide general utility bucket, two other buckets are available as standard equipment: a narrow bucket, 96 in. wide, also rated at 4 cu. yd. and a bulk materials bucket, 120 in. wide, rated at 5 cu. yd. This tractor shovel is equipped with 4-wheel air brakes. The reverse curve safety arms allow the operator full 360-deg. vision. *The Yale & Towne Mfg. Co., Contractors Machinery Division, Batavia, N.Y.*

Enter 327 on Reader Card

(Continued on page 168)

In secondary blasting, it's a lot better to hook-up and ignite your safety fuse with Quarrycord

Prime with safety fuse and blasting caps. You'll play-it-safe two ways:

- No danger from stray electrical currents or thunderstorms.
- No big "boom!": you get a series of small shots: "pop-pop-pop".

Connect and ignite your safety fuse primers with Quarrycord and play-it-safe *again* because—

- No men on the rock pile. The entire blast is set off by *one* man at a point where escape is safe and easy.

Quarrycord is packed on spools in 100-ft. lengths. It is easily lighted with a match and burns with a very hot open flame at the rate of about one foot per second.

HOW TO USE QUARRYCORD

Cut your safety fuse in equal lengths as prescribed by your State law, and prepare your primer cartridges. On the end of the fuse opposite the blasting cap place a Connector. This is a metal tube containing an ignition compound in the slotted end, and color-banded for easy identification. Load and tamp the holes.

When ready to blast, connect all holes with Quarrycord, placing it in the slot of each Connector and pressing the "lid" down to hold the Quarrycord firmly in place and assist ignition.

Connect your main lines with cross lines wherever these will cut down the over-all burning time. Lead main lines off to a point away from the rock pile. When all is ready, light this end with a match and go to a place of safety. o-s

It's quite a story, told completely in this folder which we'll send you, free, when you ask for it. Write today.

Your explosives supplier can supply Quarrycord and Connectors.

THE ENSIGN-BICKFORD COMPANY

Simsbury, Connecticut • Since 1836

Primacord® and Detacord® Detonating Fuse, Safety Fuse, Ignitacord®, Quarrycord®, Pyrotechnical Devices and Blasting Accessories

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MONEY MAKING IDEAS FOR YOU---FREE

USE THESE CARDS FOR MORE INFORMATION ON:

1. **Advertised Products**
2. **New Machinery**
3. **New Literature**

How to use:

Each advertisement in this issue is provided with a key number, so is each new machinery and new literature item. For more information on any of these items simply fill in the key numbers in the appropriate space on the adjoining card and send it to us. We'll do the rest.

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No Postage Stamp Necessary If Mailed in the United States

FIRST CLASS
PERMIT NO. 1417
CHICAGO, ILL.

– POSTAGE WILL BE PAID BY –

ROCK PRODUCTS
79 WEST MONROE ST.
CHICAGO 3, ILL.

READER-SERVICE CARD RP-4-58

ROCK PRODUCTS **APRIL, 1958** Cannot be serviced after
79 W. Monroe St. Chicago 3, Illinois June 1, 1958 postmark.

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Name_____ Position_____

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MONEY MAKING IDEAS FOR YOU---FREE

READER-SERVICE CARD

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Company Address_____ City_____ Zone____ State_____

MAIN PRODUCT OF PLANT_____ CAPACITY_____

[THIS INFORMATION WILL HELP US GIVE YOU MORE COMPLETE SERVICE.]

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YOU CAN RECEIVE MORE INFORMATION ON:

1. **Advertised Products**
2. **New Machinery**
3. **New Literature**

How to use:

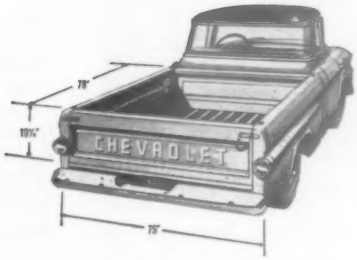
Each advertisement in this issue is provided with a key number, so is each new machinery and new literature item. For more information on any of these items simply fill in the key numbers in the appropriate space on the adjoining card and send it to us. We'll do the rest.

NEW FLEETSIDE BY CHEVROLET

Here's the new sweetheart of the Task-Force fleet, Chevrolet's new Fleetside pickup! No truck has ever been better to look at . . . or better for your business.

Long, sweeping lines, graceful body contours . . . *new* truck appearance that's fleet, dashing and completely modern! Yet there's even more to the new Chevrolet Fleetside than the striking beauty that first meets your eye. There's *size*, for instance: extra room inside to pack many additional cubic feet of payload. And with double-walled lower side panels, durable hardwood floor, and solidly constructed full-width tailgate, the new Fleetside is the toughest of pickup bodies, too! A new adjustable latch keeps graintight tailgate free from rattles.

Here's a new high in hard-working utility, matched by new styling that makes you stand out on any street. See the new Fleetside at your Chevrolet dealer's now! . . . Chevrolet Division of General Motors, Detroit 2, Michigan.



More load space than any other comparable low-priced pickup. In lengths of either 78 inches or 98* inches and a full six feet in width, this new body actually provides 50% more cubic capacity than the conventional pickup box! **Optional at extra cost.*

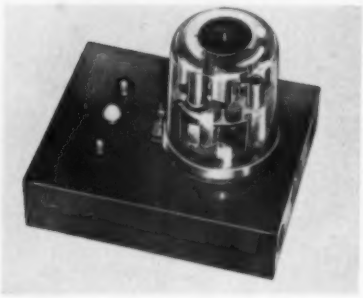
Plenty of work-whipping hustle and muscle. Your choice of two great engines—standard 145-h.p. Thriftmaster 6 or optional at extra cost 160-h.p. Trademaster V8. And truck-engineered chassis components will take all the abuse your most bruising hauls can give them!

CHEVROLET **CHEVROLET TASK·FORCE TRUCKS**

Enter 1455 on Reader Card

NEW MACHINERY

(Continued from page 163)

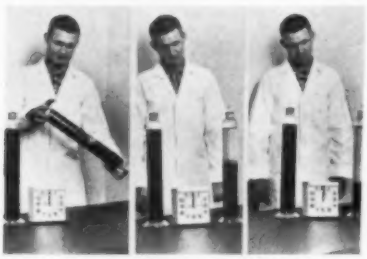


Electronic feed control

A NEW LOAD STAR FEED CONTROL maintains, within 5 percent, a constant and unwavering flow of feed into pulverizers, hammermills, extractors, mixers, attrition mills, roller mills and other motor-driven processing machinery. Effective liquid feed control also can be achieved. The manufacturer claims installation of the control may improve production capacity by more than 30 percent and prevent jammings and breakdowns due to overloading. *Load Star Corp., 1474 S. Vandeventer Ave., St. Louis 10, Mo.*

Enter 318 on Reader Card

Flocculating agent

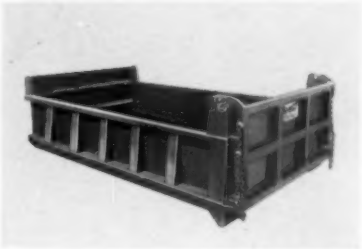


AN ORGANIC FLOCCULATING AGENT, Polyox coagulant, increases the settling and filtration rates of dispersed solids. It rapidly adsorbs on many types of suspended solids to produce tough, stable flocs. As a result, the settling and filtration rates of the solid particles are improved markedly. The effectiveness of the flocculant over a wide pH range has been demonstrated in a number of systems, including sand, gravel and clay suspensions.

Because of its high flocculation efficiency at low weight concentrations, Polyox coagulant increases throughput of plant thickeners and filters at minimum cost. The photo depicts settling of a coal slurry in 1½ min. *Union Carbide Chemicals Co., 30 East 42nd St., New York 17, N.Y.*

Enter 319 on Reader Card

Heavy-duty dump body



THIS HEAVY DUTY DUMP BODY NOW includes box type side braces for greater support for the side panels. Vertical and horizontal bracing for the tailgate protects it from distortion. Additional strength is provided by continuous welding around all side braces and the tailgate, and the wrap-around angle brace strengthens the corner post and rear end.

To make dumping easier, the body's tailgate hinge point is 2 in. higher than the top edge of the tailgate. This prevents the load from exerting a counter force on top of the tailgate.

The body also features corner posts, body sides and rear apron that are integrally welded together to form a rigid steel sub-structure. *Gar Wood Industries, Inc., Wayne, Mich.*

Enter 320 on Reader Card

Sieve shaker

A NEW PATTERN in shaking action has been built into the Dynamic sieve shaker. The shaker can be used for all types of field, laboratory and production sieving or grading operations on materials such as sand, gravel, aggregates and similar substances.

The shaking pattern involves rotation of the sieve platform in a small circular arc at the same time that it is being swayed in a vertical arc. An impact is imparted to the platform six times per revolution. The shaker motion continuously moves and redistributes the particles being analyzed over the sieve meshes. The tapping action assures proper separation of all materials and a fast flow of the materials through the sieve meshes. The shaker is available in either hand operated or motorized models and in sizes for 8 or 12-in. diam. sieves. The shaker housing, guards and sieve holders are made of aluminum. *Soiltest, Inc., 4711 W. North Ave., Chicago 39, Ill.*

Enter 322 on Reader Card

Braking attachment

AN INDEPENDENT BRAKE CONTROL group has recently been made available for the Caterpillar DW20 tractor. Designed for use with either wagons or scrapers, the attachment allows the operator to engage the brakes of the trailed unit only. It works independently of the standard tractor brakes, and serves as an anti-jackknifing device when the machine is operating on hazardous underfooting.

The control group consists of a two-position hand-operated air valve and air circuit, with the hand valve being mounted conveniently on the steering column.

The braking attachment is available for field installation, or may be factory-installed on new machines when specified. *Caterpillar Tractor Co., Peoria, Ill.*

Enter 323 on Reader Card

(Continued on page 170)

Air springs provided for vibrating screens

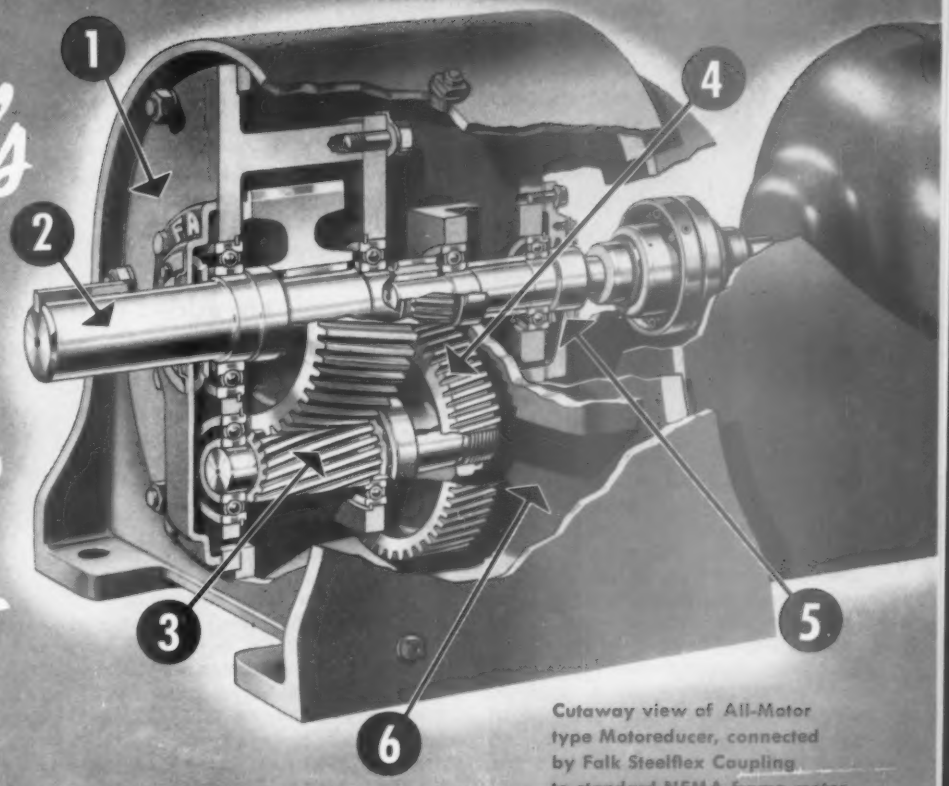
AIR SPRINGS HAVE BEEN ADDED to a line of vibrating screens to afford maximum isolation of vibration, quiet operation and reduced maintenance costs. Constructed of durable nylon cord and special high tensile strength, heat-resistant compounds, the air springs provide 98 to 99 percent vibration isolation, depending upon the air pressure used. They are easy to install and there are no mechanical parts to lubricate or service. One size can accommodate a wide range of screen sizes.

The air springs make it possible to adjust to weight differences by altering the pressure, thereby keeping the deck level when handling feed containing large quantities of water. Air springs are now available on new Allis-Chalmers floor-mounted vibrating screens in sizes 5 to 12 ft. and larger. They can also be installed on floor-mounted screens in the field if the screen is already floor-mounted with dual steel spring arrangements on each corner. *Allis-Chalmers, Milwaukee 1, Wis.*

Enter 321 on Reader Card

Enter 1448 on Reader Card

Here's the inside story—



Cutaway view of All-Motor type Motoreducer, connected by Falk Steelflex Coupling to standard NEMA frame motor

WHY Falk Motoreducers give better service—have longer life

Here is the "inside story" behind the all-steel All-Motor type FALK Motoreducer's universal reputation as a gear drive unmatched in quality, efficiency, dependability, ease of maintenance and long life. These "In-built" factors are—

1 **ALL-STEEL HOUSINGS.** Rugged, strong, rigid...all parts are manufactured from heavy steel plate, formed and welded in the Falk Weld Shop.

2 **LARGE OVERHUNG LOAD CAPACITY.** Large shafts, oversize bearings...rigid mountings with wide bearing spans to handle maximum applied loads.

3 **PRECISION GEARING.** Heat-treated alloy steel gearing, precision cut and shaved after heat treatment to eliminate distortion. Quiet, crown-shaved pinions.

4 **EXTRA-CAPACITY GEARING.** Special extra-capacity gear-tooth form with larger contact area gives greater strength, higher load-carrying capacity.

5 **SEALED HOUSINGS.** Splashproof, dustproof, oil-tight construction. Dual closures and one-way vents keep oil in, dust and moisture out.

6 **POSITIVE LUBRICATION.** Large sump capacity...oiltight construction assures clean lubricant...revolving elements lubricated by direct dip.

When you buy or specify the All-Motor type FALK Motoreducer, you get all these—plus the tremendous advantage of full interchangeability of motors. Switch motors as desired—use any make, style or type of standard foot-mounted motor within the unit's AGMA rating—with a minimum of difficulty or "down time."

Available in sizes up to 75 hp—*with or without motor*—from convenient factory, field or distributor stocks, from coast to coast. **Write for Bulletin 3100.**

60,000 HOURS WITHOUT A FAILURE!

Sixty thousand hours is a lot of hours—but the FALK Motoreducer in the unretouched photo above has served that long without failure or need of repair.

This 3 hp unit is one of over 60 FALK Motoreducers in daily service in an Eastern plant of a large milling company, whose president says, in part:

"One of the main advantages of FALK Motoreducers is their adaptability to any motor. Reducers and motors can be easily interchanged....Our service records confirm the wisdom of our choice of FALK equipment as our standard."

FALK ...a good name in industry

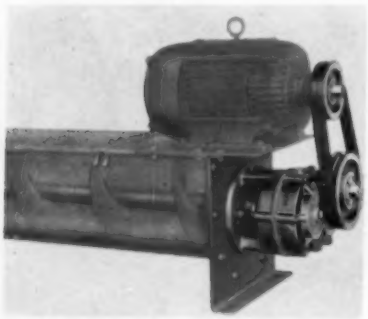
THE FALK CORPORATION, MILWAUKEE, WISCONSIN

MANUFACTURERS OF

- Motoreducers
- Speed Reducers
- Flexible Couplings
- Shaft Mounted Drives
- High Speed Drives
- Special Gear Drives
- Single Helical Gears
- Herringbone Gears
- Marine Drives
- Steel Castings
- Weldments
- Contract Machining

NEW MACHINERY

(Continued from page 168)



Screw conveyor drive

A SCREW CONVEYOR DRIVE that is simple to mount and adjust on standard conveyor troughs embodies a new concept in application and several new features in design. It consists of a speed reducer with packing gland and driving shaft, which mounts on the trough end. Trough ends are offered in sizes to fit most standard conveyors.

Maximum efficiency is achieved through the use of heat-treated helical steel gears and pinions. Timken bearings are used throughout the screw conveyor drive to provide ample thrust and radial capacity. Bearing seats in the housings are bored in line on special boring mills to give long bearing life. Design of the new drive insures the utmost protection for the speed reducer unit against invasion by the material handled by the screw conveyor.

The reducer with packing gland and driving shaft may be mounted or removed from the trough end easily and quickly by means of three bolts in the reducer flange.

Screw conveyor drives are available in four sizes, and each size is offered in two ratios—18 to 1 and 8 to 1. Output speeds may be chosen from preselected V-belt drive tables. *Dodge Mfg. Corp., Mishawaka, Ind.*

Enter 328 on Reader Card

New models are added to tractor line

TWO NEW TRACTORS—A CRAWLER AND A WHEEL-TYPE—and several new major items of matched working equipment have been designed and built for industrial uses. The 440-IC Crawler is mounted on two heavy steel cross members that absorb punishing shocks and stresses from front-mounted equipment. New strength and durability are designed into the power train and track assemblies. Other features of the new crawler include clutch-brake steering, which insures a high degree of maneuverability in all conditions.

The 440-I wheel-type tractor has a new heavy-duty front axle and support. Built-in power steering for this model is optional. A new clutch-type direction reverser is optional for both tractors. Other optional features include 3-point hitch and hydraulic controls. The tractors are powered by 30-hp. valve-in-head engines.

A heavy-duty loader and two new bulldozers for the crawler, and a front-end loader for the wheel-type tractor are also being built. *John Deere Industrial Div., Deere & Co., Moline, Ill.*

Enter 329 on Reader Card

Owatonna Aggregates officials E. W. Hammel and son, Donald Hammel, at their plant in Owatonna, Minn.

THE PROCESS . . .
Sand, gravel, and aggregate production from a marginal-grade glacial deposit

THE USER . . .
Owatonna Aggregates Corporation, Owatonna, Minn.

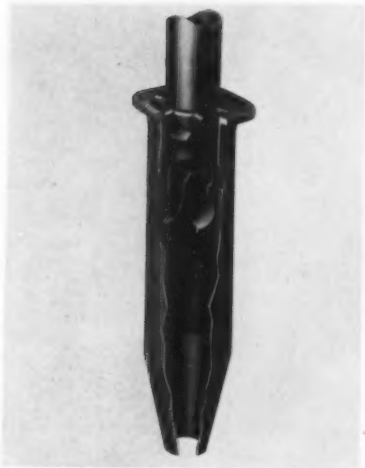
THE EQUIPMENT . . .
Wemco Sand Preparation Machine, Wemco Mobil-Mill, Wemco Remer Jig

THE RESULTS . . .
With installation of Wemco equipment, this plant is now an efficient producer of large tonnages, able to meet increasingly tight state specifications, in all size ranges, even though deposit is of poor quality.

WEMCO®

WESTERN MACHINERY COMPANY
650 Fifth Street, San Francisco 7, California
Representatives in all principal cities.

Enter 1480 on Reader Card



Larger dust collector

A LARGER CYCLO-TRELL dust collector, using 24-in. diam. tubes has been designed to apply basic advantages of the unit to collecting abrasive, hygroscopic and high-moisture content materials.

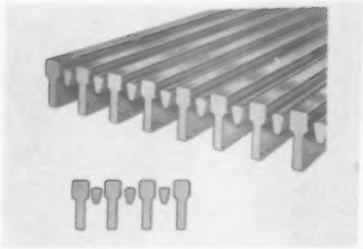
This larger collector also can reduce installation and operating costs in certain applications. In some operations where collection efficiencies below 85 percent satisfy requirements, the 24-in. Cyclo-trell could provide a more economical installation. Operating economies also are possible with a larger unit where 85 to 90 percent of the particle size of the material handled is coarser than 10 microns, even when the application requires collection efficiencies as high as 95 percent.

The 24-in. Cyclo-trell has 14 inlet vanes compared with seven in the smaller 10-in. unit. Both Cyclo-trells are centrifugal, multiple-tube collectors employing the same design features. The aerodynamically shaped inlet vanes of the outlet tube minimize gas turbulence around the vanes and develop higher centrifugal forces. Another is the positioning of the recovery vanes below the tube. This allows more of the energy contained in the centrifugal force to be recovered and put to work in the outlet tube. The resulting benefits are an appreciable reduction in pressure drop, high collection efficiency and more gas volume handled to increase the capacity of the unit. *Research-Cottrell, Inc., Bound Brook, N.J.*

Enter 341 on Reader Card

Guard bar screen

A NEW TYPE GUARD BAR SCREEN has been developed which is adaptable for flumes or vibrator applications. Designated the "T-Wedge," this new preparation screen is a combination of the "Migh-Tee" and standard "Wedge-Wire" design as can be recognized by its profile.

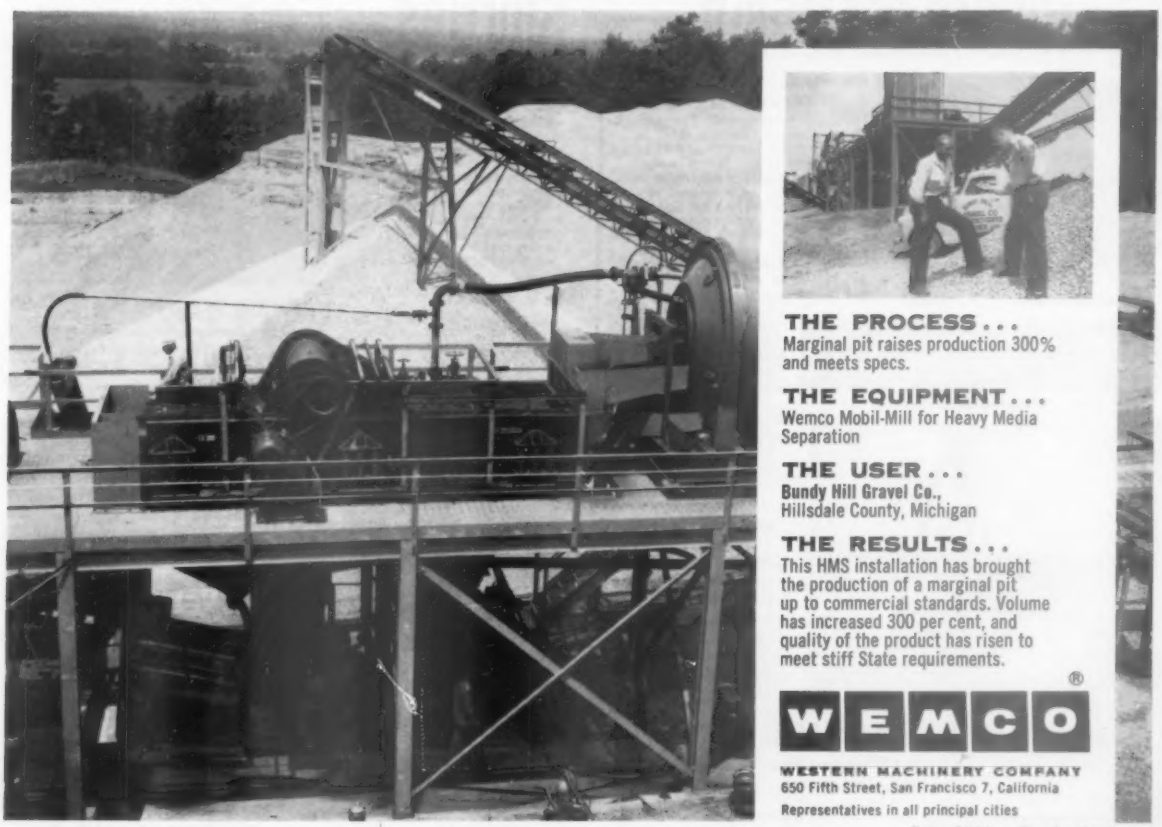


The elimination of actual guard bars increases the total screening surface. The high "T" profile wire between every wedge-shaped wire performs as both guard bar and screen thus protecting precision tolerances between the wires and insuring long life with small screen efficiency. Unique assembly of wires provides an independent flexing action of each wire, thus contributing toward non-blinding, non-clogging performance.

The T-Wedge can be interchanged with other types of Kleenslot screens without mechanical changes. It is constructed of abrasion-resistant stainless steel. *Wedge-Wire Corp., Wellington, Ohio.*

Enter 342 on Reader Card

(Continued on following page)


THE PROCESS . . .
Marginal pit raises production 300% and meets specs.
THE EQUIPMENT . . .
Wemco Mobil-Mill for Heavy Media Separation
THE USER . . .
Bundy Hill Gravel Co., Hillsdale County, Michigan
THE RESULTS . . .
This HMS installation has brought the production of a marginal pit up to commercial standards. Volume has increased 300 per cent, and quality of the product has risen to meet stiff State requirements.
WEMCO
WESTERN MACHINERY COMPANY
650 Fifth Street, San Francisco 7, California
Representatives in all principal cities

Enter 1464 on Reader Card

NEW MACHINERY

(Continued from page 171)

Drill rigs

TWO NEW DRILL RIGS are designed for exploration of beach sand mineral deposits. Combining maneuverability and ease of operation with sampling accuracy, both models are made for prospecting or plot drilling unconsolidated beach or dune deposits above or below the water table.

Model DR1500, the reconnaissance or scout drilling rig, is mounted on a 1½-ton, 4 x 4 truck equipped with a front end winch and power takeoff. The 15 ft. 9 in. high-strength lightweight boom is hydraulically operated.

Model DR165, the plot or "Pilot" drill rig, is a skid-mounted self contained unit which can be mounted on a 6 x 6 truck having a bed length of 12 to 14 ft. It has the same piping system, using a 180 gal. water tank. The 18-ft. boom is topped with a spring loaded crown pulley. Walking beam action can be adjusted up to 60 strokes per minute. Individual jet line hoist, casing pulling hoist, and a drive rope hoist are included in this compact unit. *Carpco Manufacturing, Inc., P. O. Box 3272, Jacksonville 6, Fla.*

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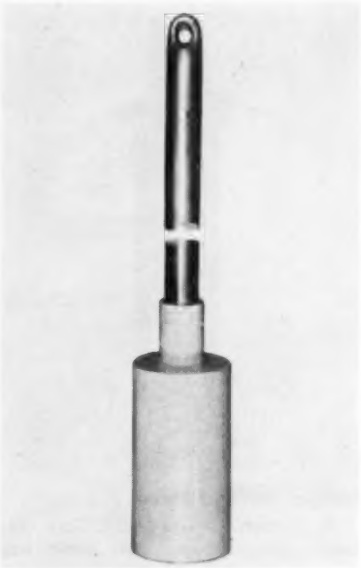
Explosive tamping poles

LIGHTWEIGHT TAMPING POLES permit faster tamping of explosives in both horizontal and vertical blast holes. Because poles are constructed of aluminum pipe, they are lightweight, non-warping, non-splintering and are said to be non-sparking.

A feature of the poles is the hook and eye arrangement for adding lengths. This involves passing the hook from the extension pole through the eye at the upper end of the lead pole. The resulting union is said to be strong enough to withstand heaviest leverage without slipping, loosening or breaking free.



Austin tamping poles are offered with 1⅝, 4½ or 5-in. diam. rubber head blocks. Lengths of 4 to 20 ft. are available. *Austin Powder Co., Cleveland 13, Ohio.*

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HINGED PLATEGRIP
BELT FASTENER No. 500

FOR HEAVY CONVEYOR BELTS OF CHANGING LENGTH

These heavy-duty belt fasteners make a strong, flexible joint in conveyor belts, belts of any width and of from ⅜" to ½" thickness. They offer special advantages in mines, quarries or industrial set-ups where length or position of belt is frequently changed, because sections can be removed or added at will. Joints are opened for this purpose by simply pulling out the hinge pin.

Easily and quickly applied on the job or in the shop. Special design gives deep compression into belting and smooth, flush joint.

Write for Circular

ARMSTRONG-BRAY & CO.
5336 Northwest Highway · CHICAGO 30, U. S. A.

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Slurries...handled at lower cost

The new WILFLEY MODEL K Centrifugal Sand Pump embodies important mechanical improvements especially adapted to the handling of cement slurry and results in stepped-up production and substantial power savings. Individual engineering. Write for details.

A. R. WILFLEY and SONS, Inc.
Denver, Colo., U.S.A.

Buy WILFLEY for Cost-Saving Performance

WILFLEY
centrifugal PUMPS

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In a Hayward, there's no contact between the closing mechanism and the material handled. This means much less wear, reduced upkeep, big savings in bucket maintenance. THE HAYWARD COMPANY, 50 Church St., New York 7, N.Y.

HAYWARD BUCKETS
CLAM SHELL · ELECTRIC · ORANGE PEEL · GRAPPLES
famous for performance since 1888

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DURABLE ECONOMICAL WOVENWIRE SCREENS KNOWN AROUND THE WORLD

TWIN CITY IRON & WIRE CO.
35 W. WATER STREET · ST. PAUL 1, MINNESOTA

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Keep Haul Units Humping

No Loading Bottlenecks with Dependable MANITOWOC Performance!

When there's a Manitowoc in your pit, trucks keep moving . . . production never slows down. That's because dependable, bonus-capacity Manitowocs take bigger bites, deliver bigger payloads. And rugged simplicity of design keeps output steady under the toughest digging conditions. Here are some of the outstanding Manitowoc features that pay off in *any* pit operation . . .

Faster Cycle Speed . . . Manitowoc's simplicity of design provides a minimum number of gears and pinions with only working gears turning to make full use of all available horsepower . . . the exclusive "powerflow" slide pinion arrangement uses only one set of clutches to drive, travel, swing and boom hoist. Balanced working speeds keep power at the dipper.

Rugged Construction . . . From the wide, self-cleaning, box-type treads, right up to the extra-strong, internally reinforced boom and dipper sticks, Manitowocs are engineered to tackle tough rock duty. Every component is built to take the steady pounding of rock digging.

More Power and Stamina . . . Manitowoc adds power by saving power . . . the full power flow is directed only to the operating function. That's why Manitowocs dig faster and longer without downtime . . . that's why they outperform any other shovel in their class.

Full Range of Models . . . to fit any pit or quarry operation; all quickly converted to dragline or clamshell use. Get more profit-filled information on the full line of Manitowoc shovels . . . call your distributor now!

Manitowoc

MANITOWOC ENGINEERING CORP.

MANITOWOC, WISCONSIN

CRANES	SHOVELS	DRAGLINES	TRENCH HOES
20 TON - 100 TON	1-YD. - 5½-YD.	1-YD. - 6-YD.	1-YD. - 2½-YD.

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MANUFACTURERS NEWS

Wimpfen made research head

SHELDON P. WIMPFEN, former AEC assistant director of the division of raw materials and manager of the AEC Grand Junction, Colo. office, has joined Western Machinery Co., San Francisco, Calif., as general manager of the planning, research and development department. In addition to having served as editor of the Mining Congress Journal in Washington, D.C., Mr. Wimpfen is a member of the American Institute of Mining & Metallurgical Engineers, the Mining and Metallurgical Society of America and the American Mining Congress.

W. Perry named president

W. H. PERRY, general sales manager for The Webb Corp., Webb City, Mo., recently resigned this post to become president of the Cardinal Scale Manufacturing Co., Webb City, which he established a year ago. Mr. Perry, who joined Webb in 1936, had served as general sales manager since 1942.

F. H. Conover retires

DORR-OLIVER INCORPORATED, Stamford, Conn., has announced the retirement of Frank H. Conover, director of FluoSolids technical division, a position he has held since 1955. Mr. Conover, a graduate of Rutgers University, joined the company in 1923, serving as assistant to the chief engineer. In 1954, he was elected as a vice president while serving as procurement manager.

Also announced was the reorganization of the technical division and FluoSolids sales into a new, over-all FluoSolids Division encompassing sales, design, development and estimating. Robert B. Thompson, former FluoSolids sales manager has been named director of the combined division.

Under the director, Robert J. Priestley has been promoted to manager of sales. Harry E. Lundberg, design manager since 1955, has been transferred to Oakland, Calif. where he will assume the responsibility of manager of filtration engineering. Philip B. Booth, design supervisor, has been named manager of the design section. Walfred J. Jukkola heads the development section as manager.

Ryerson appointments

JOSEPH T. RYERSON & SON, INC., Chicago, Ill., announced two appointments in its operating division. Herbert G. Dent has been named engineering consultant to the vice president in charge of operations. Succeeding Mr. Dent as director of plant engineering is Stanley J. Miller, formerly assistant director.

A. P. Green Co. promotions

A. R. Barnett J. J. Offutt

THE A. P. GREEN FIRE BRICK CO., Mexico, Mo., has announced the election of J. J. Offutt as a vice president of the company. Mr. Offutt, who joined the company in 1928, also was appointed director of sales.

Also announced was the appointment of A. R. Barnett, vice president, as director of the companies domestic subsidiaries including Canada.

Cement plant engineers incorporate consulting firm

JAMES H. HOWARD & ASSOCIATES, INC., Houston, Texas, has announced a change in the organizational form of its consulting engineering business to a corporation. The officers of the firm are: James H. Howard, president; E. Bruce Appling, vice president-treasurer; and Kenneth E. Brown, vice president-secretary.

Russell H. Dunham dies

RUSSELL H. DUNHAM, former president and chairman of the board of the Hercules Powder Company, Wilmington, Del., died February 2. Mr. Dunham became president of the company in 1912, when the company was organized. He retired as president in 1939 but continued as board chairman until 1944 and as a director until 1956.

Made Porter vice president

BURTON SCHELLENBACH has been named vice president of sales for H. K. Porter Co., Inc., New York, N.Y. Mr. Schellenbach, a graduate of the University of Cincinnati, will make his headquarters in the company's Pittsburgh offices.

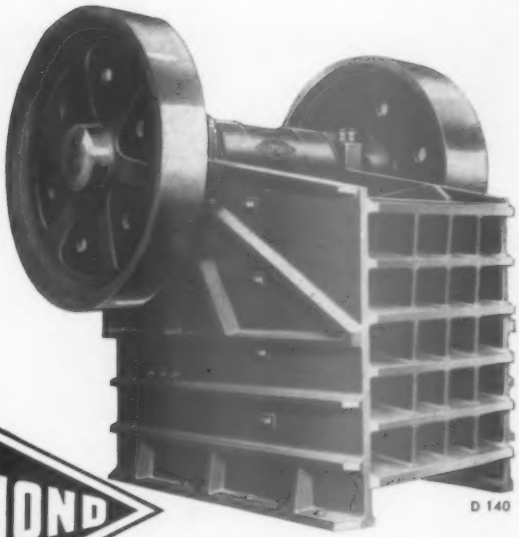
Paradynamics Inc. buys controlling interest of FWD

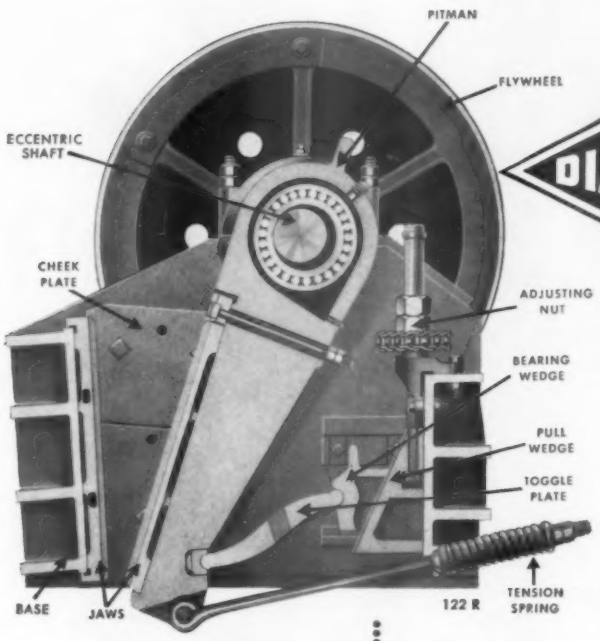
SALE OF CONTROLLING INTEREST in Four Wheel Drive Auto Co., Clintonville, Wis., to Paradynamics Incorporated, St. Louis, Mo. research and development corporation, has been completed according to an announcement by Franklin Lyons, chairman of the FWD board. Paradynamics Incorporated purchased 151,000 of 300,000 outstanding shares for an undisclosed price.

Mr. Lyons and five other directors resigned as members of the board. George E. Mallinckrodt, president of Paradynamics Incorporated, was elected chairman of the new FWD board, with Mr. Lyons continuing as a director. There were no other changes in the executive alignment.

(Continued on page 178)

Continuous Tonnages In Hardest Rock





DIAMOND

DIAMOND JAW CRUSHERS

When you can get continuous tonnages from an aggregate producing operation, you're in a good profit position. With Diamond Jaw Crushers on the job, plants operate at peak capacity. Screens and conveyors are kept full—bins loaded . . . and continuous tonnages assured.

Diamond's "long-jaw" design handles the hardest rock with ease, breaks it down into uniform sizes. A positive and uniform crushing cycle with a quick jaw opening, permits fast feed and discharge . . . superior crushing records.

Diamond Jaw Crushers can really take it, too. The Pitman operates on a forged steel shaft and supports the moving jaw. The jaws are extra long. Made of manganese steel, they're easily changeable and reversible for longer service. A Diamond exclusive . . . a DOUBLE ROW of adjustable Timken bearings for both main and Pitman bearing assemblies carries the heaviest radial and thrust loads. As rugged as their job is, the Pitman, jaws and bearings never flinch at the crash-bangs of rock crushing.

Records in hundreds of pits, quarries, construction jobs, prove that a Diamond Jaw Crusher is a top performer. Its ability to take rough punishment and produce greater tonnage per square foot of jaw area, makes it a profitable investment. If it's your responsibility to see that aggregate production costs are kept down, you'll want to get complete details on Diamond Jaw Crushers . . . no obligation. Write for catalog No. D-116.

Diamond Jaw Crushers in 11 Sizes

Capacities 1½ to 500 tons per hour.

6 x 12	10 x 36	24 x 36
10 x 16	15 x 24	30 x 42
10 x 20	15 x 36	36 x 48
10 x 24	20 x 36	

Diamond makes everything for the aggregate producer:

Jaw Crushers • Roll Crushers • Conveyors • Screens and Washers • Feeders and Bins • Portable and Stationary Crushing Plants for Rock and Gravel.

DIAMOND IRON WORKS

DIVISION

GOODMAN MANUFACTURING COMPANY

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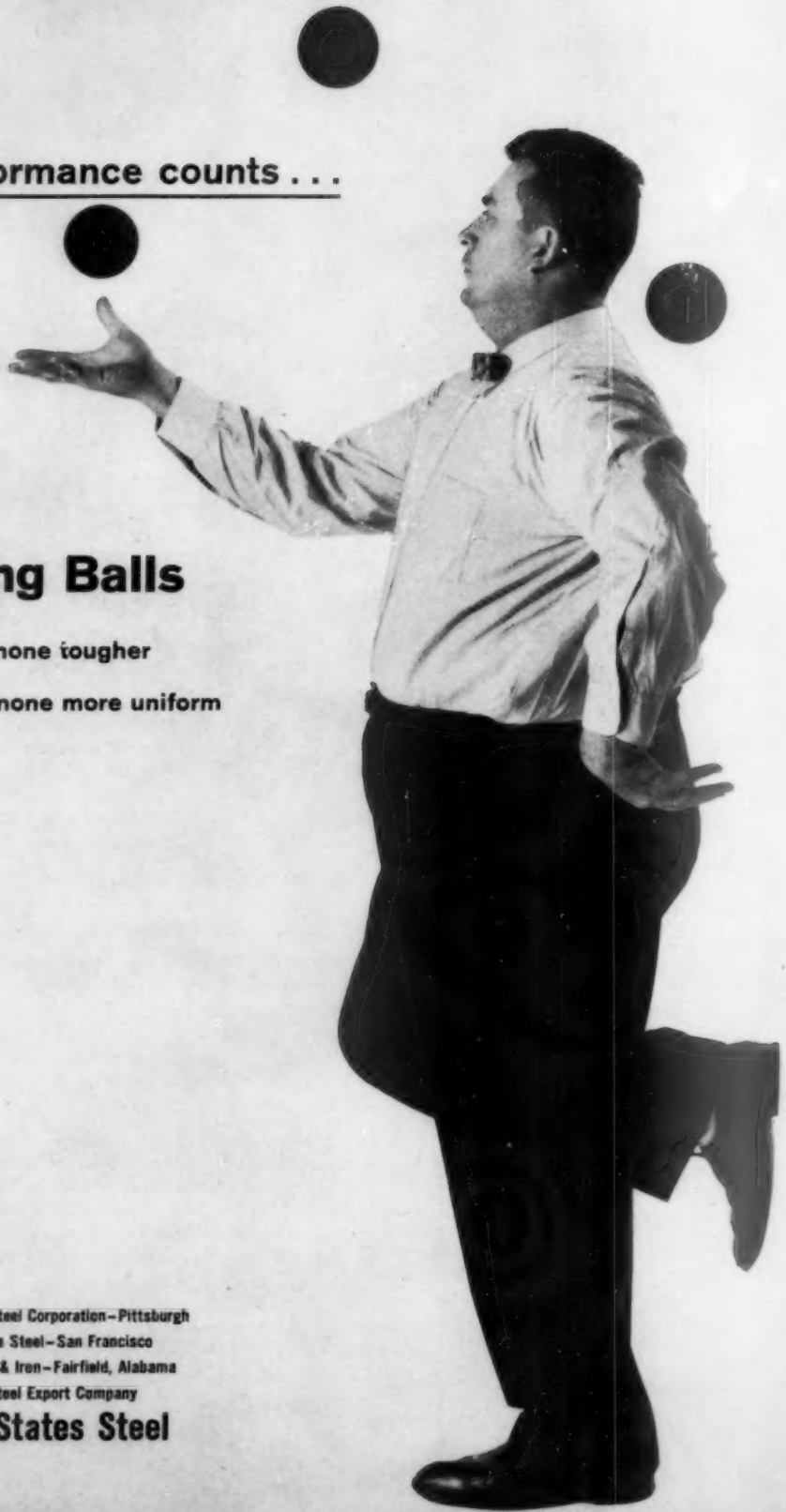
Whenever performance counts . . .



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forged steel—none tougher

none harder—none more uniform

USS
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United States Steel Corporation—Pittsburgh
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Tennessee Coal & Iron—Fairfield, Alabama
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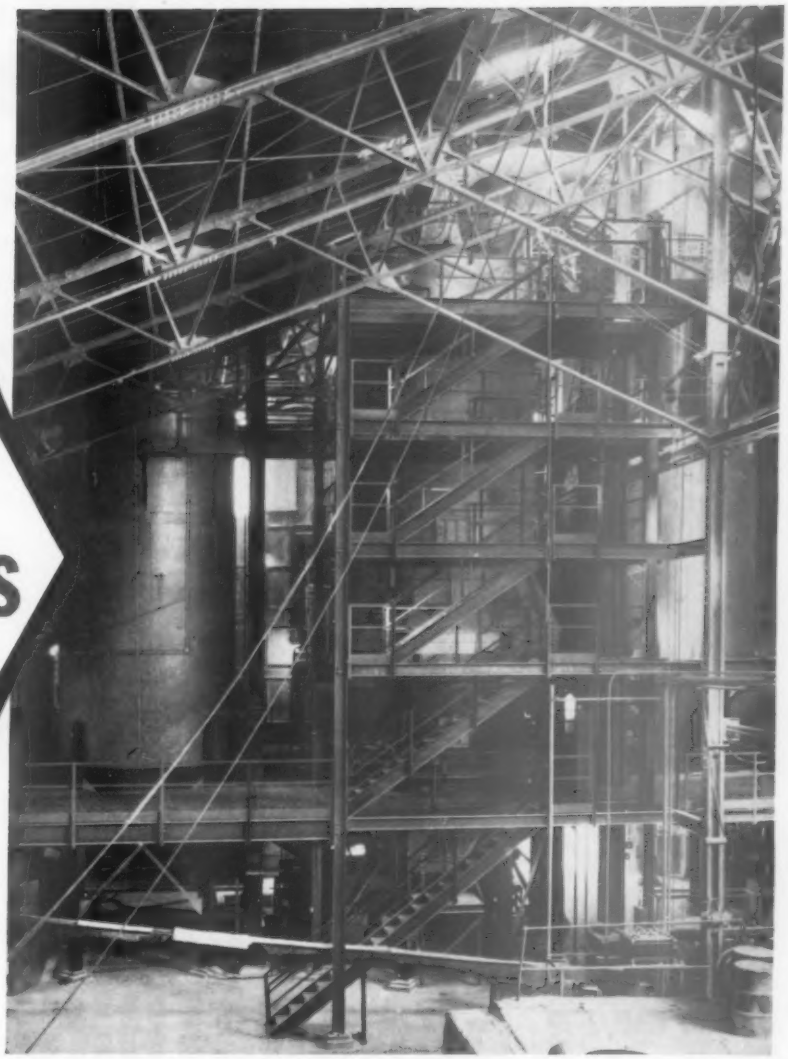
United States Steel

Pioneered and Proven at NELCO...

The Dorrco FluoSolids System

for limestone calcination



A second complete Dorrco FluoSolids System for the production of 100 tons of lime per day . . . an improved version of the existing installation . . . has recently been installed at the Adams, Massachusetts plant of the New England Lime Company. The original System, on stream since 1949 and the first to produce lime commercially by fluidization, is also producing 100 tpd of high quality lime and has firmly established the efficiency and economy of this new calcining method over more conventional methods.

The NELCO operation has conclusively proven that fluidized techniques offer many advantages over previous methods in meeting the prime requirements for calcining limestones . . . significantly . . . high thermal efficiency resulting in notable fuel economy and consistently uniform product of high quality due to closely controlled operating conditions.

Now, application of the same basic principles involved in limestone calcination is indicated in a wide variety of calcining problems. For example, Dorr-Oliver is at present supplying three new installations of multi-compartment units for the handling of a total of 1500 tons per day of western phosphate rock. And there's a good chance that the benefits to be derived from the high capacity-low calcining costs inherent in the Dorrco FluoSolids System may well fit into your plant operations, either existing or proposed.

The knowledge gained from world-wide applications of fluidized techniques plus complete research, development and pilot plant facilities are available . . . we welcome your inquiry. For complete information, write to Dorr-Oliver Incorporated, Stamford, Connecticut.

FluoSolids T.M. Reg. U.S. Pat. Off.

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WORLD-WIDE RESEARCH • ENGINEERING • EQUIPMENT
STAMFORD • CONNECTICUT • U.S.A.

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MANUFACTURERS NEWS

(Continued from page 174)

American Cyanamid appoints executive vice presidents

VICE PRESIDENTS Kenneth H. Klipstein and George R. Martin have been elected to the newly created office of executive vice president of American Cyanamid Company, New York, N.Y., according to an announcement by Dr. W. G. Malcolm, president.

Mr. Klipstein, who joined Cyanamid in 1933, became a vice president and director in 1957. He has served as assistant general manager of the former Calco Division and as general manager of the Research Division.

Mr. Martin joined the company in 1927 to organize a legal department, and served as its head until 1951. He has been a member of the board since 1928 and a vice president for 13 years.

Blaw-Knox sales manager

J. P. CULLEN has been named manager of clamshell bucket sales, Blaw-Knox Co., Pittsburgh, Pa. Mr. Cullen, West Coast manager for the company since 1951, succeeded Arnold Hooper who retired recently.

J. A. Nissen made manager

JAMES A. NISSEN HAS been appointed general sales manager for Denver Equipment Co., Denver, Colo. Mr. Nissen joins the company in this capacity after two years as a DECO dealer in San Francisco, Calif. In 1948, he organized his own company for the sale of mineral processing equipment.

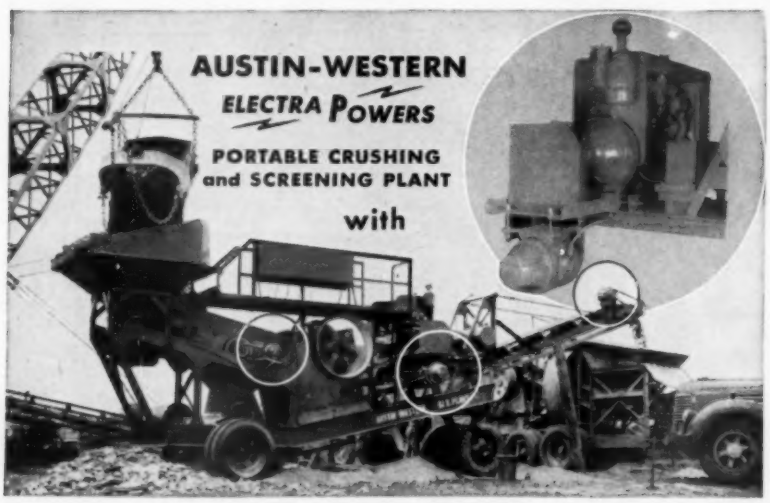
New CIMA officers

THE CONSTRUCTION INDUSTRY MANUFACTURERS ASSOCIATION, in its Annual Meeting of Members at Washington, D.C., on Jan. 22, 1958, elected Boyd S. Oberlink president. Mr. Oberlink, vice president in charge of the Tractor Group, Allis-Chalmers Mfg. Co., Milwaukee, Wis., and a director of the company, previously was first vice president of the association and has served on its board of directors.

Other officers elected to serve a one year term are: first vice president, G. A. Gilbertson, president, The Frank G. Hough Co.; second vice president, Henry Barnhart, vice president and general manager, Construction Equipment Division, Baldwin-Lima-Hamilton Corp.; treasurer, Ray McLean, president, The Jaeger Machine Co.

Seven new members were elected to serve on the CIMA board of directors for three years; they are: Donald V. Buttenheim, publisher and president, Buttenheim-Dix Publishing Co.; W. K. Cox, manager sales promotion, Caterpillar Tractor Co.; John F. Harrison, president, Buffalo-Springfield Roller Co., Division of Koehring Co.; E. H. Holt, vice president of sales, Barber-Greene Co.; Kenneth Lindsay, executive vice president, Iowa Manufacturing Co.; Frederick Salditt, vice president, Harnischfeger Corp.; and A. K. Thomas, assistant to the vice president, Construction Machinery Section, Chain Belt Co.

(Continued on page 180)



WINPOWER GENERATORS

Baldwin-Lima-Hamilton Corp.,—Construction Equipment Division—Lima, Ohio, manufacturers of AUSTIN-WESTERN crushing and screening equipment shown here, use WINPOWER generators for electric power. They know that by using WINPOWER powered electric motors and speed reducer drives on conveyors, feeders and screens they can eliminate long drive belts and drive shafts, expensive to buy and difficult to replace in case of failure in the field. *Whatever* your need there is a WINPOWER Generator for you. Generators as well as gasoline or diesel powered electric plants in capacities from 400 watts to 100 KW. You can save time and money with WINPOWER. See your WINPOWER Distributor or phone, write or wire at once for complete illustrated folder and specifications.

WINPOWER MFG. CO.
NEWTON, IOWA • U.S.A.

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Why the LINK-BELT Series 100 is

TODAY'S MOST WIDELY ACCEPTED BELT IDLER

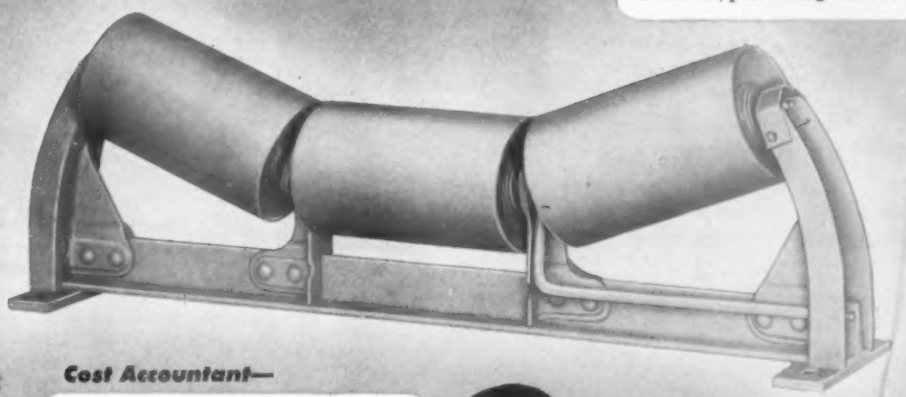
Here's what men who know idlers have to say

Superintendent—

"Service records of the Link-Belt Series 100 belt conveyor idler show that there's no more durable belt conveyor idler in the capacity range. It's a 'work horse'—gives economical service under hard duty, conveying all but the heaviest and coarsest materials."

Engineer—

"Look at these design features. Self-contained, concentric rolls with bearings fully enclosed and protected... strong heavy ribbed brackets and sturdy rigid frames maintain accurate roll alignment—won't spread under load . . . hex nuts that lock rolls in brackets, preventing shaft rotation."



Cost Accountant—

"All costs considered—installation, operation and maintenance. You won't find a better buy in belt conveyor idlers than the Link-Belt Series 100. Its free-rolling action requires less power . . . reduces wear on operating parts and belt . . . cuts replacements."

Maintenance Man—

"Its cartridge seal is the best I've seen . . . has no springs, clips and other small parts to lose . . . cuts servicing time when required. It's tops for keeping grease in, dirt out under the grimiest conditions. Grease fittings are protected, easy to reach."

Broad range of types meets all material and operating requirements

RUGGED . . . free-rolling . . . dirt- and dust-proof—the Link-Belt Series 100 belt conveyor idler combines these and other features for low-cost, dependable materials handling under severe, continuous service conditions. What's more, you have a wide choice of types for any requirement—whether you handle coal, sand, gravel or iron ore . . . sticky or free-flowing materials.

Sturdy rolls of the Series 100 are accurately machined for concentricity—welded for added strength and to keep out dirt and moisture. Smooth, round surfaces and edges prevent belt damage. As for dependability of its roller bearings—Link-Belt has *never* known a bearing failure due to overloading a Series 100 idler. Equally important, strong malleable iron brackets and sturdy, rigid frames maintain accurate roll alignment.

For facts on the Series 100 belt conveyor idler, see your nearby Link-Belt office or authorized stock-carrying distributor. Or write for Book 2416.

LINK-BELT

BELT CONVEYOR IDLERS

LINK-BELT COMPANY: Executive Offices, Prudential Plaza, Chicago 1. To Serve Industry There Are Link-Belt Plants, Sales Offices, Stock Carrying Factory Branch Stores and Distributors in All Principal Cities. Export Office, New York 7; Canada, Scarboro (Toronto 13); Australia, Marrickville (Sydney), N.S.W.; South Africa, Springs. Representatives Throughout the World. 14,402

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USING SCREEN SEPARATIONS?
NOTHING CLASSIFIES AS
PERFECTLY AS AIR

GAYCO
CENTRIFUGAL
AIR
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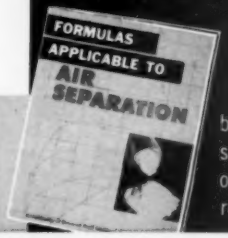
Classify practically all dry fine materials

You get:
- CLOSER SEPARATIONS
- IMPROVED PRODUCTION
- NO UNDESIRABLE OVERSIZE.

RANGE 60 to 400 mesh.
Timken bearings.
Choice of Standard or Heavy-Duty Models.



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MANUFACTURERS NEWS

(Continued from page 178)

C. Kissell made president, Pomeroy new board chairman

CARTER KISSELL has been elected president of National Malleable & Steel Castings Co., Cleveland, Ohio, succeeding Cleve H. Pomeroy, who has retired to become chairman of the board. Mr. Pomeroy joined the company in 1920 after an eight-year career in the investment securities field. He became treasurer in 1935, secretary and treasurer in 1936 and a director in 1938. In 1944 he was made a vice president and was elected president in 1946. His election as chairman fills a post vacant since the retirement of Henry F. Pope in 1945.

Mr. Kissell became the company's legal counsel in 1941 and was made a director in 1954.

Victor acquisitions

VICTOR EQUIPMENT CO., San Francisco, Calif., has announced the acquisition of six companies engaged in the production of compressed acetylene, and liquid and compressed oxygen, hydrogen, nitrogen and argon. Victor will issue and exchange 71,000 shares of its common stock for the acquisition. The six companies are: California Oxygen Co., California Liquid Oxygen, and California Medical Gases Co., all of Sacramento; Welding Gases of Salinas, California Oxygen Co. of La Habra, and California Oxygen Co., San Diego. Headquarters will be located in San Francisco.

Acquires Kennard Corp.

AMERICAN AIR FILTER CO., INC., Louisville, Ky., has formally completed, through an exchange of common stock, the acquisition of Kennard Corporation, St. Louis, Mo., a manufacturer of heating and cooling coils, and heating, ventilating and cooling units. Kennard Corporation was chartered in 1934 by Sam M. Kennard.

ASA elects officers

H. THOMAS HALLOWELL, JR., president of the Standard Pressed Steel Co., Jenkintown, Pa., has been re-elected president of the American Standards Association for his third consecutive term. John R. Townsend, special assistant, Office of Assistant Secretary of Defense, was elected vice president. He succeeds Van. H. Leichliter, president, American Wire and Steel Division, U. S. Steel Corporation.

(Continued on page 182)

NOTHING **TRANSMITS POWER** WITH THE **SHOCK RESISTANCE** OF ROEBLING ROYAL BLUE WIRE ROPE. Just one of the working qualities that make it superior to any other power-transmitting instrument on a comparative cost basis. Flexibility, resistance to abrasion and fatigue are other factors that make Royal Blue incomparably strong . . . stronger than any wire rope you've ever used. For details on this harder-working wire rope, call the nearest Roebling Distributor, or write Wire Rope Division, John A. Roebling's Sons Corporation, Trenton 2, New Jersey.

ROEBLING

Branch Offices in Principal Cities
Subsidiary of The Colorado Fuel and Iron Corporation

ROEBLING
ROYAL·1105·BLUE
DESIGN
FOR WIRE ROPE
Its ready adaptability is evident wherever power is transmitted. It conforms to unique design requirements. Use wire rope to transmit power.

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MANUFACTURERS NEWS

(Continued from page 180)

New Chain Belt directors

CHAIN BELT CO., Milwaukee, Wis., has announced the election of E. M. Rhodes, vice president of the industrial equipment section, and Charles E. Wampler, president of Wisconsin Telephone Co., to its board of directors.

The directors named Frederick G. Syburg as vice president for purchasing and George A. Evans as secretary. Mr. Evans succeeds W. C. Messinger who was made a vice president.

Also announced, was the retirement of Brinton Welser, senior vice president and director, who has served with the company more than 44 years.

Public relations director for Atlas Powder Company

DR. SYDNEY STEELE has been named director of public relations for Atlas Powder Co., Wilmington, Del., according to an announcement by Ralph K. Gottshall, president. Dr. Steele has been acting director of the department since last September.

Dr. Steele joined the company in 1950 as manager of market research. He became director of the planning staff in 1952, and in 1956 was appointed industrial assistant to the senior vice president in charge of the chemicals division.

Made Republic Gear officer

STEVEN S. GORDON has been appointed vice president and general manager of Republic Gear Co., Detroit, Mich. Mr. Gordon, formerly director of sales, has been with the company for 17 years.

MM appointments

M. E. CARROLL, director of field sales, has been promoted to general sales manager of Minneapolis-Moline Co. In addition to being responsible for all sales operations, he will have charge of the departments of market research, advertising, customer services, parts, technical publications and the service organization.

In other appointments, E. A. Henry, manager of OEM and government sales, has been made manager of the newly organized industrial sales department. In charge of three district sales functions within the department are: David S. Hansen, industrial dealer sales; George W. Balch, OEM sales; and Sidney R. Morrow, government sales.

Reich opens branch office

REICH BROS. MFG. CO., INC., Terre Haute, Ind., has announced the establishment of a western branch office at 1201 E. 8th St., Los Angeles 21, Calif. Harlan K. Knudson has been appointed factory representative for the branch.

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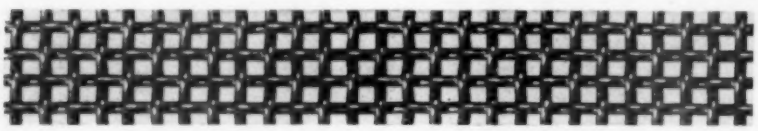
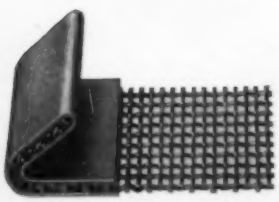


TYLER SCREENS LAST LONGER

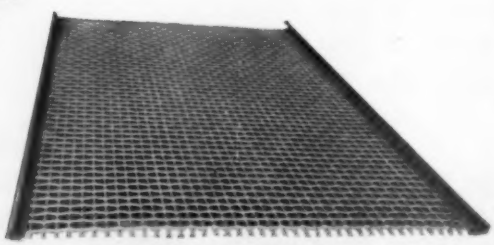


Tyler Type "AX" Hook Strip. For wire diameters from .047" to 5/16" inclusive.

Tyler Type "CX" Hook Strip. For wire diameters .041" and smaller.

Tyler Woven Wire Screens are woven with laboratory approved wires on precision machines. The high quality of Tyler Screens is apparent in their long life and service under the most difficult of screening conditions.

Tyler Screen Sections are furnished for all makes of vibrating screens in all meshes and metals. Each section is fabricated with the right type of edge or hook strip for the specification of screen cloth and to fit the particular make and model of screening machine on which it will be used.



Telephone HE 1-5400 • *Teletype* CV 586

THE W. S. TYLER COMPANY
CLEVELAND 14, OHIO
Manufacturers of Woven Wire Screens and Screening Machinery

Enter 1493 on Reader Card

N&W research has proved the locations of multi-million ton 97.8% pure limestone deposits

To a trained geologist, outcroppings such as these mean abundant limestone, but the scope and depth of the beds can be determined only through test drillings.

The thoroughness of N&W research is depicted by this photo. Extensive drillings were made, and cores were sent to an independent geologic laboratory for scientific testing.

Norfolk and Western plant location specialists and consulting geologists have found in *The Land of Plenty* a vast source of top-grade limestone. One location alone is estimated to contain more than 100 million tons!

The beds range in thickness up to 100 feet, and the percentage of purity is almost 100%. Moreover, this limestone is easily accessible . . . which means increased operating economy for manufacturers needing high quality calcium or dolomitic limestone.

These statements are backed up by facts obtained through extensive research in the field and the laboratory. All findings have been confirmed and are open to your inspection.

Our plant location specialists will be glad to provide detailed information . . . in confidence and without obligation. Let them give you the facts on limestone and other advantages of *The Land of Plenty.*

And here are typical analyses*

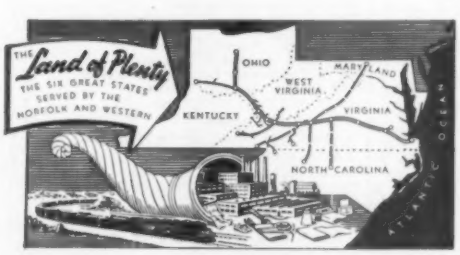
	DHL-1-1	DHL-1-2	DHL-1-3
SILICA ($Si O_2$)	36%	.30%	.34%
IRON OXIDE ($Fe_2 O_3$)	.072	.043	.049
ALUMINA ($Al_2 O_3$)	.21	.20	.19
LIME (CaO)	55.00	54.90	55.40
MAGNESIA (MgO)	.65	.62	.51
SULPHUR (S)	.012	.011	.015
PHOSPHORUS (P)	.006	.006	.009
IGNITION LOSS	43.20	43.50	43.20
CALCIUM CARBONATE (Calculated)	97.90	97.72	98.51
MAGNESIUM CARBONATE (Calculated)	1.36	1.30	1.07

*Report prepared by Pittsburgh Testing Laboratories, Pittsburgh, Pa.

The minimum of dark spots in this typical test core indicates premium limestone — ideal for chemical lime, calcium carbide and other important processed materials.

Write, wire or call—

L. E. Ward, Jr., Manager
Industrial and Agricultural Dept.
Drawer RP-795 (Phone Diamond 4-1451, Ext. 474)
Norfolk and Western Railway
Roanoke, Virginia



Norfolk and Western RAILWAY

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4- 8	8.60
9-14	8.40
15-19	8.20
20-30	7.80

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Mail to: ROCK PRODUCTS, Where To Buy Dept., 79 West Monroe St., Chicago 3, Illinois

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Paint Spray	Fuel Oil	Steam
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Welding	& Discharge	Pneumatic
Pile Driver	Gasoline	Road Builders

BELTING

Conveyor	Grader	Hot Material	V-Belts
Elevator	Chute Lining	Mucker	Transmission

PROMPT SHIPMENTS LOW COST QUALITY PRODUCTS

CARLYLE RUBBER CO., INC.
103-107 Warren St., New York 7, N. Y. Digby9-3810

FOR SALE

1—Ingersoll-Rand HLV centrifugal pump, 4000 GPM at 320 foot head, powered by AC 400 H.P. 1776 RPM motor.

1—Ingersoll-Rand HLV centrifugal pump 1500 GPM at 175 foot head, powered by Westinghouse 100 H.P. 1776 RPM motor.

Both of above are direct coupled mounted on I-R frame, and have line starters. Like new condition.

ARTHUR OVERGAARD, INC.
Box 35, Elroy, Wisconsin

COLLECTOR—Ducon Cyclone 11,000 CFM

CRUSHER—Walker-Elliott Fine Rotary Crusher

HAMMERMILL—S-6 Penna. 42" x 32"

ELEVATOR—90' Open Inclined with buckets between two strands of chain.

PUG MILL—Chambers 30" x 14'7"

GRIZZLY ROLLS—Steel Frame contains 6 live rollers 12" dia. x 36" long.

PAN CONVEYORS—24" x 18' - 30" x 33' - 36" x 54'

SCREEN—5' x 7' Rotex Sifter Model 421

SHOVELS—L77 Lorain 1½ yd. and L57 Lorain 1¼ yd. Both excellent

SEPARATOR—Dings Magnetic Cross Belt for granular materials.

MOTOR—200 HP, 875 RPM GE Slip Ring. Also 25 other motors 3 HP to 75 HP Squirrel Cage All 440/3/60

G. & W. H. CORSON, INC.
Plymouth Meeting, Pa.

FOR SALE

CEMENT PLANT 1,200,000 Bbl. yearly capacity with 4 De Roll Vertical Kilns.

RAYMOND Pulverizer 66" dia., 6 roll

BUCYRUS Revolving SHOVELS, Models 50-B, 320-B.

ROTARY DRYER & KILNS: 8' x 125', 9 x 30, 7 x 60, 6' x 50', 4'6" x 40', 4' x 30', 3' x 15'.

ROTARY COOLERS: 104" x 30', 104" x 70', Submerger Type, UNUSED.

HARDINGE CONICAL MILL, 10' dia. x 96", with Silica block liners.

AL. CH. 7' x 24' COMPEB MILL, 450 HP, two-compartment.

MARCY ROD MILL, 4' x 10', 75 HP.

KENNEDY VAN SAUN GYRATORY CRUSHER, 12" gearless, #37½.

WORTHINGTON Air Compressor, 450 CFM, 75 HP.

ROBBINS Vibrating screen, 3' x 10'.

BROOKVILLE Locomotive, 8 Tons.

WE WILL PAY CASH FOR GOOD USED EQUIPMENT

PERRY EQUIPMENT CORP.
1418 N. 6th St., Philadelphia 22, Pa.
POplar 3-3505

ELEC. AIR COMPRESSORS
3—3078 CFM Inger. Rand 500 H.P. New 1947
3—690 CFM Inger. Rand 125 H.P. New 1956

DIESEL ELEC. LOCOMOTIVES
4—65 ton Whitcomb 1—25 Ton & 1—70 Ton G.E. 20 Ton Davenport Gas Locomotive.

ROTARY DRYERS & KILNS
4' x 20', 5' x 25', 6' x 72', 8' x 150', 11' x 200'

REDUCTION MILLS
6'6" x 14'6" Marcy Rod Mill
4' x 8' Hardinge Rod Mill
5' x 10' Kennedy-Van Saun Rod Mill
3—No. 77 Marcy Ball Mills
8' x 60" Hardinge Ball Mill
4'-0" Traylor Type TY Reduction Crusher
36 x 42 Traylor Jaw Crushers
25B Telsmith Primary Breaker
10A Telsmith Primary Breaker
30" x 36" Traylor Type H Jaw Crusher
18" Superior McCully Secondary
56" x 72 Traylor Jaw Crusher

VIBRATING SCREENS
2—4 x 8 Seco 2 Deck. 1—4 x 14, 3 Deck.

4 ELEC. WHIRLEY CRANES
2 Amer. R25-75 Ganty 165' Boom
2 Amer. R20-60 Ganty 139' Boom

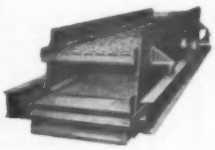
R. C. STANHOPE, INC.
60 E. 42nd St., N.Y. 17, N.Y.

BONDED EQUIPMENT BARGAINS

NEW CURRENT MODELS IMMEDIATE SHIPMENT FROM OUR FACTORY
WRITE, WIRE OR PHONE FOR FREE CATALOG AND PRICES

NEW BONDED® HEAVY DUTY VIBRATING SCREENS

BUY WITH CONFIDENCE. REFERENCES ARE: Ohio National Bank, Columbus, Ohio; Dun & Bradstreet



Model Number	No. of Decks	Screening Area	Sale Price
124A	1	2'x4'	$ 443.00
224A	2	2'x4'	472.00
126A	1	2'x6'	472.00
226A	2	2'x6'	501.00
136A	1	3'x6'	581.00
236A	2	3'x6'	688.00
336A	3	3'x6'	956.00
138A	1	3'x8'	675.00
238A	2	3'x8'	815.00
338A	3	3'x8'	996.00
336B	3	3'x6'	1620.00
436B	4	3'x6'	1685.00
138B	1	3'x8'	1510.00
238B	2	3'x8'	1620.00
338B	3	3'x8'	1735.00
248B	2	4'x8'	2310.00
348B	3	4'x8'	2440.00
2410B	2	4'x10'	2490.00
3410B	3	4'x10'	2550.00
2412B	2	4'x12'	2590.00
3412B	3	4'x12'	2970.00
4412B	4	4'x12'	3165.00

HEAVY DUTY MODELS, TYPE B: Four bearing positive throw eccentric shaft; 3' x 6' to 5' x 14', 1 to 5 decks. Write for New 8-page Bulletin No. 1087.

NEW BONDED® GENERAL DUTY VIBRATING SCREENS

More than 6000 Mines and Quarries have modernized with Bonded Equipment

GENERAL DUTY SCREENS, TYPE A: Eccentric weight mechanism, spring mounted, 1 to 3 decks, 2' x 4' to 3' x 8'. Write for New 8-page Bulletin No. 1086.

For mineral, chemical and other industrial products. Fast, efficient and economical for cleaning, sizing, grading, dewatering. Made in all metals, including stainless steel. Enclosed models for hot materials or dust control. Bonded screens are built for any screening operation, wet or dry.

NEW BONDED® TROUGHING IDLER CONVEYOR BARGAINS

Complete Pre-Fab sections of 8" Jones & Laughlin Jr. I Beam Frame Conveyors quickly and easily joined together on the job. These beams are rolled with .20% Copper Content. Atmospheric exposure tests disclose that Junior Beams, with .20% Copper have as much as four times the resistance to corrosion as non-copper steels. Braced with structural angle, welded to frame for maximum rigidity. Equipped with 5" roll diameter idlers and return rolls, 20" diameter head pulley and 16" diameter tail pulley, mounted on 2¼" or 2⅞" diameter shaft.

We take our loss on our stock of short length belting. You can save as much as 50% on BONDED CONVEYOR SPECIALS, with conveyor belting in two pieces. Belt is new 4-ply, 28 oz. duck 1/16" top rubber cover x 1/32" bottom cover Major grade belt and is Fresh Stock made by leading manufacturers.

A full line of accessories available, including carrying and return belt covers. Write For Bulletin # 1138.

CONVEYOR PRICES INCLUDE BELTING

Belt Width	Length of Conveyor	List Price	Sale Price	Add or Deduct Per Ft.
14"	25'	$1397	$ 722	
14"	50'	2222	1144	$16.84
14"	85'	3377	1733	
16"	20'	1262	636	
16"	45'	2137	1058	
16"	60'	2662	1359	18.04
16"	90'	3712	1900	
18"	25'	1477	794	
18"	45'	2217	1166	
18"	70'	3142	1648	
18"	85'	3697	1933	19.24
18"	100'	4252	2220	
18"	130'	5362	2797	
20"	25'	1517	828	
20"	60'	2882	1533	
20"	75'	3467	1838	20.37
20"	90'	4052	2145	
24"	25'	1590	898	
24"	45'	2430	1330	
24"	70'	3480	1875	
24"	100'	4740	2514	21.78
24"	120'	5580	2950	
24"	150'	6840	3603	
30"	50'	2911	1617	
30"	70'	3871	2119	24.75
30"	90'	4831	2614	
36"	25'	1818	1118	
36"	45'	2858	1678	
36"	60'	3638	2096	27.95
36"	100'	5718	3214	

NEW CONVEYOR BELTING SAVE UP TO 30%

WE PAY FREIGHT ON 200 POUNDS OR OVER

Major Brand: 12# to 15# Average Friction Pull. 800# to 1000# Average Cover Tensile.

Heavy Duty 4-ply, 28-oz. duck, 1/8" top rubber cover x 1/32" bottom rubber belting having high tensile strength, tough cotton duck, strong carcass and proper flexibility. For heavy boxes, bags and bulk materials. Troughs easily. Famous brands at deep cut prices. Fresh stocks.

Width	Ply	List Price Per Ft.	Sale Price Per Ft.
14"	4	$3.63	$2.53
16"	4	4.08	2.87
18"	4	4.51	3.29
20"	4	4.97	3.80
24"	4	5.85	4.28
30"	4	7.18	5.21
36"	4	8.51	6.18

Major Bee Brand: 16# to 19# Average Friction Pull. 2500# to 3000# Average Cover Tensile. Skim coat between plies.

A high grade of heavy duty 4 and 5-ply, 28 oz. duck, 1/16" top rubber cover x 1/32" bottom rubber cover. These belts are for more severe service, high tonnages and abrasion resistance. For handling stone, mineral ores, concrete, cement, coal, and other similar materials, both wet and dry. Belts have molded rubber edges.

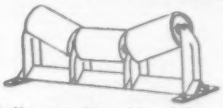
Width	Ply	List Price Per Ft.	Sale Price Per Ft.
14"	4	$4.31	$2.96
16"	4	4.85	3.46
18"	4	5.39	3.83
20"	4	5.90	4.27
24"	4	6.94	4.94
30"	4	8.53	6.07
36"	4	10.09	7.35
24"	5	8.14	5.78

Other widths, plies, duck weights and cover thickness available at low prices. Write for Free Sample and Bulletin #1209.

NEW BONDED® FEEDERS

For high tonnage and controlled feed of Aggregate, Sand, Gravel, Crushed Stone, Clay products, Metallic Ores, Coal, Cinders and almost any other bulk material to Crushers, Screens, Conveyors, Mills and other process machinery. Feeder may be driven from Troughing Conveyors. All models available in abrasion resistant alloy steel plate. Capacities to 440 tons per hour. WRITE FOR BULLETIN #1211. Priced From $224.00

NEW IDLERS AND RETURN ROLLS SAVE 25% AND MORE



3-roll, 5" diameter Troughing Idlers for:

14" belt	$18.50	24" belt	$21.35
16" belt	19.25	30" belt	22.00
18" belt	20.50	36" belt	22.75
20" belt	20.75	48" belt	25.50

1-roll, 5" diameter Return Idlers for:

14" belt	$7.25	24" belt	$ 8.50
16" belt	7.50	30" belt	9.50
18" belt	8.00	36" belt	10.00
20" belt	8.25	48" belt	11.50

All steel. Interchangeable with other well-known makes. Furnished with easily replaceable prelubricated Sealed ball bearings. Also can be furnished with greasable type Alemite Fitted bearings at slight additional cost. Maintenance is negligible. Bonded Rubber Disc Impact Idlers priced from $61.00. Write For Bulletin #1138.

NEW BONDED BUCKET ELEVATORS

Open or Enclosed, Vertical or Inclined Bucket Elevators with Continuous or Spaced Buckets mounted on Chain or Belting. Bonded's 19 standard models mean lower prices and you get a Custom Built Elevator at no extra cost.

There is a style of bucket for virtually every material or condition: wet or dry, lumpy or fine, granular, slivery, or pellet shapes, hot or chemically active. Prices listed below are for Vertical Enclosed Elevator. Other sizes, styles, and types available in both chain and belt type elevators, at equally low prices and will be quoted on request. A complete line of Continuous Steel, Salem Steel and Malleable Iron Buckets available in a wide variety of sizes, shapes, gauges and styles at low prices. Write for Bulletin #1203.

Model No.	Bucket Size Inches	First 20' (Discharge Ht.)	Add or Deduct Per Ft.
Style "A" Spaced Malleable Buckets On Belt			
B53A	5x3½	$1099.00	$20.50
B64A	6x4	1116.50	21.25
B85A	8x5	1311.50	27.25
B106A	10x6	1692.50	33.00
B127A	12x7	1854.50	37.25
Style "E" Continuous Steel Buckets On Chain			
C85E	8x5x 7¾	$1397.00	$31.25
C126E	12x6x11¾	1599.00	34.25
C106E	10x8x11⅝	1604.00	34.75
C128E	12x8x11⅝	1634.00	35.50
C148E	14x8x11⅝	1710.00	36.75

BONDED SCALE AND MACHINE COMPANY

PHONE Days: Hickory 4-2186 — WRITE FOR FREE CATALOG AND PRICES — PHONE Evenings: AX. 1-2213, HU 6-3156

128 Bellevue — Mfrs. of Scales, Conveyors, Conveyor Parts, Idlers, Vibrating Screens, Crushers and Feeders — COLUMBUS 7, OHIO

SPECIAL ITEMS

Traylor 56"x72" sectional frame "Bulldog" jaw crusher
Traylor 48"x60" jaw crusher
Traylor 4' Model TY crusher. Numerous spare parts.
Sauerman 2 yd Cableway 800' 100 HP elec. motor
5 Euclid 4 P.F.D. End Dump 15 yd Cummins Diesel
Belt conveyors 24", 30", 36" individual units
Complete 5 Gramm 75 bbl cement bulkers w. Onan engines and compressors w/air outlets into tanks.

STEAM GENERATORS for CONCRETE PLANTS

Littleford On-Off KWIK Package type
Cleaver-Brooks 50 HP Package type 100 PSI
Cleaver-Brooks LFM-8 80 HP 100 PSI Pack. type.
Cyclotherm MC 90 Pack. type 100 PSI

CONCRETE MIXERS

Ransome Model 84S, 3 yd. tilting type
Smith 42Z, 4 yd. tilting type
Koehring 34S 2 yd. tilting type

TRUCK MIXERS

30 Jaeger, REX, Smith 3 to 6½ cu. yd. high discharge, horizontal, truck mounted.

CRUSHERS—KILNS—DRYERS

JAW: Acme 10x20, 15x36, 14x26, 14x33, 10x42, 16x33, 18x32, 25x40. Eagle 10x16, 20x36. Diamond 24x36". Cedar Rapids 10x20, 15x36, 20x36, 25x40. Farrell 10x20, 15x30, 14x36, 18x36, 36x48. Buchanan Type C 30x43, 36x42. Traylor 15x36, 24x36. Allis-Chalmers 30x18. Good Roads 10x30. Telsmith 18x32. Pioneer 30x42. Universal 18x24.
GYRATORY: A1-Chal 32Z, 6', 7½', 8, 9, 9K, 10, 16, 20, 30, 42, Telesmith 8B, 28" Intereene,; Kennedy Van Saun 7, 19, 25½-S, 37½, 38; Traylor TY 1'8", 4' Type TS, TY 3', T2 3', TZ3'.
ROLL: Cedar Rapids 40x20. Pioneer 40x22. Pioneer 30x18. Telsmith 24x16. Universal 40x24, 18x30.
HAMMERMILL: Jeffray Type B3 24x20, Type B 36x24, 36x36, 36x42, Eagle 24x24, Stedman 24x30, Cedar-Rapids 50-50, 30x33. Penn Model SXR 100
BALL MILL: Hardinge conical 5'x26", 5'x48",Gates 5'x22", Marcy 7', Int. X-18 5'x6'.
TUBE MILLS: 6'0" x 21' Smidth, 5' x 16' A-C.
ROD MILL: 3' x 8' Denver, 3' x 6' Marcy, 4' x 10' J&C (Never used)
AUTOCLAVES: Jackson & Church 6'x50' bolted.
CONE: Symons 20", 3', 3' Telsmith 28".
KILNS: 4'x42', 5'x30', 6'x50'6", 6'4"x45', 6'x72' Vulcan 9x100, 10'6"x165', 8'x124', 6'x90', 6'x72'.
DRYERS: 6'x60', 6'x72', 5'x24', 4'6"x32', 5'6"x20', 6'x30'
COMPEB MILLS: A-C 7'x24' with motor drive.

CRUSHING PLANTS

Austin-Western Mdl. 1018 Port. Complete 10x36 jaw crusher Diesel powered. New 1955
Diamond 77, new 1956, 10x36 jaw crusher, roll crusher, complete Portable.
Pioneer Port. 10x24 jaw crusher, 24x16 roll crusher, complete Diesel.
Cedar Rapids 20x36 jaw crusher Cat. D8800 Diesel power, 40x22 triple roll crusher.
C-R 3540 Prim. Port. Diesel
Eagle washing plant, classifier sand screws, screen.
C-R Primary Port. 22 x 36 Jaw. Diesel.
C-R WASH-ALL Screening Plant Complete.
Eagle 36x25" single screwspiral flights washer classifier dehydrator

CONCRETE PLANTS AND EQUIPMENT

Johnson 400 yd 5 aggr. 1500 bbls. cement batch 5000 bbl. silo 3-2 yd mixers
Johnson automatic batch 10,000 bbls. cement storage 3-2 yd mixers; screening equipment.
Johnson 105 ton TY 237 bin TY 168 batcher.
Auto-Crete port. batching plant, self contained, elec. up to 150 yds per day; one man operation.
Fuller Type U200 rotary vacuum pump 27".
Fuller Type V-70 rotary vacuum pump 25".
Fuller 10" air slide cement system.
Noble CA 504, 500 ton 6 compt. aggr. bin silo 2000
Butler 150 ton 5 compt. aggr. bin w/weighbatcher.
Pre-Mix 150 ton 4 compt. 3 aggr. 1 cement; ground cement silo 2 yd concrete mixer. New 1955.
Johnson 105 ton 3 compartment aggregate
Fuller Kinyon Type C 6" cement unloader.
Rex 160, 190, 200 Pumpcretes.

HYDRAULIC SUCTION DREDGES

Morris 10"x8" Diesel. Pontoon mounted.
10" Portable Diesel powered. Complete.
12" Diesel powered, pontoon mounted. Complete.
Ellicott 8" with cutter. Diesel Hull 43'x15'x3'6".
20' Ellicott Diesel 155'x49'x8'.
8"Hydraulic Diesel. On 32'x8' steel pontoons.
Amsco 10" Diesel power portable. Excellent.
6" portable Diesel complete with cutters, etc.
8" H&B twin Diesel drive. Complete.

SCREENS

Tyler F-300 4'x12' 2 deck w/spray bars.
Trommel 6'x45' 75 H.P. elec. motor.
Kennedy Van Saun 3'x10' 3 deck.
Tyler-Niagara 3 deck 7½ H.P. A.C. motor.
New Holland 4'x12' 4 deck.
Telsmith 5'x12' 6bl. deck elec. motor.

RICHARD P. WALSH CO.
30 Church St. New York 7, N.Y.
CO 7-0728 Cable: RICHWALSH

QUARRY EQUIPMENT

Cedarapids 1826 twin jaw crusher. Good.
Cedarapids 1036 roller bearing jaw crusher.
Cedarapids 1624 single pass plant on rubber.
Cedarapids 4033 hammermill. Rebuilt.
Cedarapids 2033 hammermill. Rebuilt.
Telsmith 24" cone crusher. Good.
New Holland 30" x 8' reciprocating feeder.
Cedarapids 4' x 12' double deck screen. Rebuilt.
New Holland 4' x 12' double deck screen. Rebuilt.
Pioneer 4' x 8' double deck screen. Rebuilt.
Smithco 24" x 60' portable belt conveyor.
27½ ton, single-compartment 8' x 12' bin.
60-ton, two-compartment, 8' x 18' storage bin with clam gates.
100-ton, two compartment, 13' x 23' bin.
Special bins to your specifications.
Conveyors—18"—24"—30"—36". Also conveyor belting.

SHOVELS AND CRANES

Lorain 820 2-yd. diesel shovel-crane.
Lorain 82 2-yd. diesel shovel.
P & H 655B-LC, 2-yd. diesel dragline.
Lorain 79-J 1½ yd. diesel dragline.
Lorain 79 1½ yd. diesel shovel.
P&H 655B 1½ yd. diesel dragline.
Bucyrus-Erie 38B, 1½-yard diesel dragline. Rebuilt.
Lorain L-30J 1-yd. Diesel clam-crane.
Lorain L-41 ¾-yd. diesel shovel.
Link Belt LS-88 ¾-yard diesel shovel-drag.
Lima 34 Paymaster ¾-yard diesel shovel. Good.
Unit 1020 ¾-yard diesel powered shovel-crane.
Lorain TL-20 ¾-yd. diesel backhoe.
Lorain L-40 ¾-yard diesel clam-drag shovel.
Lorain TL-25S ¾-yd. gas clam-crane.
Insley K-12 ½-yd. gas dragline. As is.
Koehring 304 ¾-yd. diesel shovel-hoe.
Koehring 304 ¾-yd. diesel backhoe.
Buckeye 70 ¾-yd. diesel shovel.
2—Lorain MC-414 20-ton Moto-Cranes
Link Belt HC-90 25-ton truck crane.
Lorain MC-4 15-ton Moto-Crane.
Lorain MC-3 12½ ton gas moto-crane.
Lorain TL-20 10-ton gas moto-crane.

TRACTORS, TRUCKS, SCRAPERS, ETC.

6—Euclid TS-24 twin engine scrapers.
1—Euclid 15½-yd. six wheel scraper.
1—Euclid 7-yard overhung engine scraper.
1—Euclid TC-12 twin engine tractor.
1—Euclid 15-ton rear dump. Excellent.
1—Mack LRS 15-ton rear dump.
5—Euclid 10-ton rear dumps. Excellent.
1—Euclid 2200 gallon water tank semitrailer.
1—Fullman S-600. 6 to 8 yard scraper.
1—Caterpillar DW-10 scraper.
1—Allis Chalmers HD-10 tractor with hydraulic bulldozer blade.
1—International TD-14A tractor with PCU.
1—International TD18 with Bucyrus-Erie bulldozer blade. Excellent condition.
4—Euclid tractors with 3200 gallon water tank semitrailer.
1—Caterpillar D-7 with cable bulldozer blade.
1—Caterpillar D-8 with cable bulldozer blade.
1—Austin Western diesel powered grader.
1—Adams diesel powered grader.

SHOVEL ATTACHMENTS

Lorain 820, 2-yd., 23' boom, 21' stick.
Lorain 80, 1-yd., 21' boom, 17' stick.
Lorain 40, ¾-yd., 19' boom, 16' stick.
Lorain 30A, ½-yd., 16' boom, 13'4" stick.
Osgood 903, 2-yd., 24' boom, 20'6" stick.
P & H 855, 2-yd. 24' boom, 17'6" stick.

BACKHOE ATTACHMENTS

Lorain 40A, 18' boom, 7' stick, 28", 36" or 44" bucket.
Koehring 304, 19'10" boom, 5'6" stick, 36" bucket.

DIESEL POWER UNITS

Cat. D7700, 74 H.P. at 1000 RPM. Rebuilt.
Cat. D8800, 88 H.P. at 1000 RPM
Cat. D13000, 145 H.P. at 1000 RPM. Rebuilt.
GMC Twin Diesel, rebuilt.
GMC 3021C, 3-cylinder. new.

AIR COMPRESSORS

105 cu. ft. Ingersoll-Rand gas portable.
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1—10RU Joy-Sullivan Universal Rubber Tired Cutting Machine, 220/440 Volts A.C., 60 Cycle, 9 ft. Cutter Bar.

6—7 B Joy-Sullivan Bottom Type Cutting Machines, 220/440 Volts A.C., 60 Cycle, 9 ft. Cutter Bars.

3—Goodman 512 Bottom Type Cutting Machines, 220/440 Volts A.C., 60 Cycle, 9 ft. Cutter Bars.

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2—General Electric 300 KW, Stationary Rectifiers, 2300/4000/4160 Volts Primary, 275 Volts D.C. output, complete with all automatic switching equipment and associated controls.

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1—Reliance Jaw Crusher 15" x 30"
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1—Kennedy Van Saun Crusher No. 49½, Model 802 with 75 H.P. motor, Ser. No. 1351
1—Second-Hand Spider for above crusher
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☐ Cement
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☐ Gypsum
☐ Ready Mix Concrete
☐ Concrete Products

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(What?) _____

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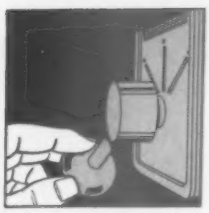

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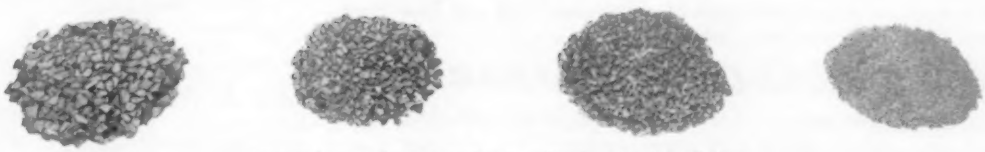

Product from *Hydrocone* crusher is uniformly cubical in all sizes.

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This Shovel Makes Good Operators Look Better!

The 2½-yd. Lorain-85A Shovel has two vitally important features—available on no other make of shovel—that will send any operator's production figures soaring, with less effort, less fatigue, easier, smoother. They are:

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LORAIN 85A

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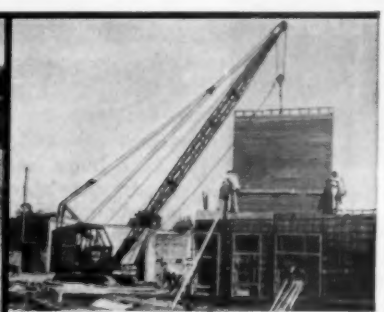

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U. S. Patent applied for.

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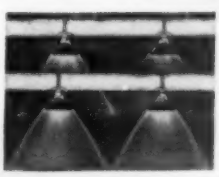

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FLINTKOTE

establishes new high production standards at **SWEETWATER, TEXAS**

The 8 deck Coe gas fired plasterboard dryer with automatic board feeding equipment in the foreground.

. . . . aided by

(Above) Board may be seen being automatically unloaded from the Coe Dryer passing on through the bundling and stacking operations. Lath follows a similar path to the left. All equipment except bundlers designed and built by Coe.

. . . COE

cooperation and equipment

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PAINESVILLE, OHIO

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with Raymond WHIZZER SEPARATION

Raymond Mechanical Air Separators . . . with built-in revolving Whizzers . . . are the key to premium products and reduced costs.

They are specially adapted for classifying raw mix and cement clinker. By proper setting of the grinding mill, the change from standard to high early strength cement can be made externally with separator running.

Whizzer Separation is equally efficient in making consistent uniform grades of gypsum, agstone, plaster products, various fillers, carbon products, chemicals and pigments.

For production of limestone sand with specified granular sand material, the Single Whizzer Separator gives economical results in removing objectionable fines. Other dedusting operations on soda ash, sea coal and similar products are easily handled.

Easy fineness control of the finished material, and greatly increased output when using the Raymond Separator in closed circuit with the grinding mill, assure high quality products at record low costs.

RAYMOND Separator Catalog

Write for detailed information.

COMBUSTION ENGINEERING, INC.

Raymond Division

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SALES OFFICES IN PRINCIPAL CITIES

Combustion Engineering-Superheater Ltd., Montreal, Canada

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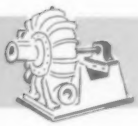
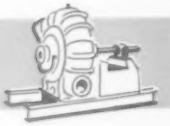
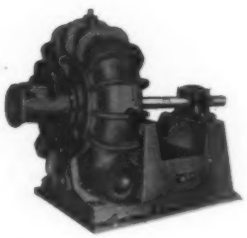
Another Customer Speaks

"The BEST THING

that has happened to me"—F. A. BURTON



BURTON GRAVEL CO.
Sand, Gravel and Cement Blocks
GRAYSVILLE, INDIANA
Telephone 25-R-15
Residence 46-R-6

February 6, 1958

Thomas Foundries
Birmingham, Alabama

Gentlemen:

I could not get prompt delivery on another Manganese Pump several years ago.

That was the best thing that has happened to me since I've been in the sand and gravel business. It caused me to buy a 10" x 8" Thomas Pump from which I have received full production with little downtime and few delays.

I had always hoped someday to have a pump I could operate a full season without major repairs. I have now found it. The Thomas Pump does it and more.

We get at least two (2) full seasons from our Thomas impellers and shell liners. This pump is a wonder.

Yours very truly,
BURTON GRAVEL COMPANY
Forest Burton
Forest A. Burton

Mr. Burton, even perhaps as you, had hoped to have some day a sand and gravel pump that would operate a full season without major repairs.

So, some five years ago he bought a Thomas Durable. Since that time, he gets at least—TWO FULL SEASONS from his Thomas impellers and shell liners!

Mr. Burton's experience is not exceptional. That's the kind of service Thomas Pumps generally render, in comparison with other makes of pumps. Hundreds of sand and gravel producers now have had the same experience, which proves:

"YOU CAN NOT BUY AT ANY PRICE, A MORE DURABLE PUMP FOR SAND AND GRAVEL—YOU CAN NOT BUY ANOTHER PUMP THAT WILL MAKE YOU AS MUCH MONEY"

Thomas Pumps Available In Sizes 6" through 16"

THOMAS FOUNDRIES, *Inc.*

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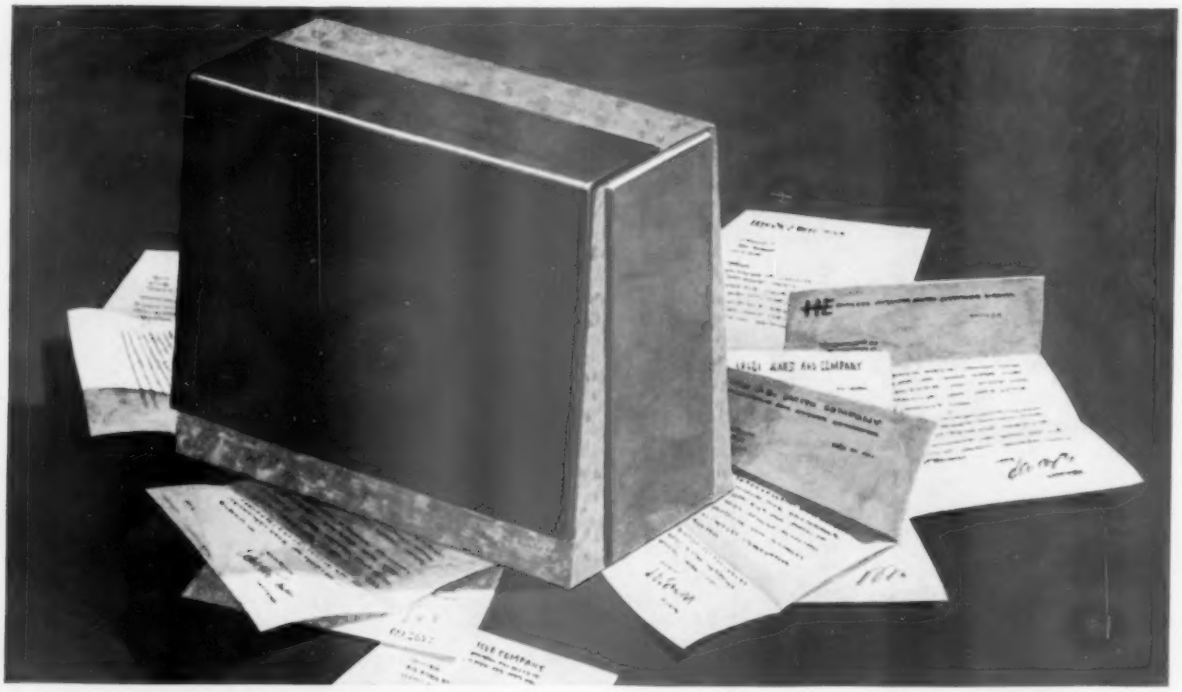
Kiln operators report 70% to 156% longer service with Kaiser Unitab* Kiln Liners



". . . definitely going back to Kaiser Unitab Kiln Liners now after comparison trial showed that (Brand C) gave less than half the service."

Kiln	Campaign	Brick	Service
#1	#1	Brand "C" (basic)	75 days
#1	#2	Kaiser Unitab Kiln Liner	192 days
#2	#1	Brand "C" (basic)	85 days
#2	#2	Kaiser Unitab Kiln Liner	185 days

". . . choice of Kaiser Unitab Kiln Liners was based on following service comparison of liners:

Kiln	Campaign	Brick	Service
#2	#1	Brand "A" (70% alumina)	95 days
#2	#2	Brand "B" (basic)	108 days
#2	#3	Kaiser Unitab Kiln Liner	183 days

Unitab Kiln Liners Increase Service Life, Reduce Down-Time

Here are the reasons why reports on Kaiser Unitab Kiln Liners consistently show improved hot-zone service:

First, the basic brick used in Kaiser Unitab Liners is *Kaiser Periclase Chrome Basic Brick*. This brick is especially designed to provide dimensional stability under loading, plus high resistance to spalling and to chemical attack by hot clinker. These features—alone—have for years been giving cement producers amazing improvements in hot-zone service.

Now, in the Unitab Liner, bonded shims and spacers add *important new reasons* for improved savings and service:

1. Simplified handling reduces installation time up to 50 per cent.
2. Accessories automatically assure correct liner placement.
3. Cardboard spacer gives automatic provision for longitudinal expansion.
4. Shim bonding adhesive gives automatic provision for circumferential expansion.

In addition, during production start-up, the overlapping shim melts and welds clinker particles to the hot face. This quickly produces a tenacious coating that *resists spalling even through repeated shut-downs!* Think of what this means in greater production, less down-time!

If you are not already using Kaiser Unitab Kiln Liners, let your Kaiser Chemicals Sales Engineer show you how they can help you reduce kiln down-time and get increased liner service.

Call or write Kaiser Chemicals Division, Dept. C-8512, Kaiser Aluminum & Chemical Sales, Inc., at any of the regional offices listed below:

PITTSBURGH 22, PA. . . . 3 Gateway Center
HAMMOND, IND. . . . 518 Calumet Building
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*The product name "Unitab" is a trademark of Kaiser Aluminum & Chemical Corporation, and succeeds the former name "Unitized Kiln Liner T3." Patents for Unitab Liners have been applied for in the U.S.A. and foreign countries.

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